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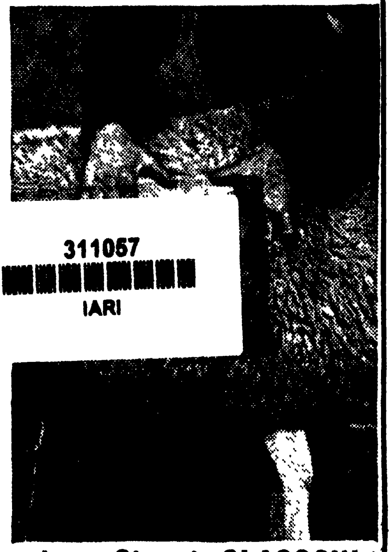

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WITH

AN ABSTRACT OF THE PROCEEDINGS AT BOARD AND GENERAL
MEETINGS, AND THE PREMIUMS OFFERED BY
THE SOCIETY IN 1940

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JOHN STIRTON.
Secretary.

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TRANSACTIONS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

◆

THE EFFECTS OF THE WAR ON AGRICULTURE.

By SIR JOHN BOYD ORR, M.D., D.Sc., F.R.S., &c.,
Rowett Research Institute, Aberdeen.

WHILE it is easy to predict some of the immediate effects of the war on agriculture, it is impossible to predict what the ultimate effects will be, because no one can foresee what world conditions will be after the war. It is certain that they will be very different from those of 1938. The war is part of a world crisis, possibly the greatest crisis which civilisation has experienced. Its cause lies much deeper than German dissatisfaction with the Versailles peace terms which, indeed, were not so severe as those Germany imposed on Russia in 1917 or on France after the Franco-German War. The fundamental cause is to be found in the social and economic upheaval which is taking place in the world. The application of science in the nineteenth century led to the tremendous expansion of industry and the production of wealth on a scale unthought of in the eighteenth century. The new wealth, however, was very unevenly distributed. The decline in British agriculture, side by side with the enormous wealth of the City of London, is only one aspect of the maldistribution of the wealth which the nineteenth century created. There are wealthy nations, such as ours and the Dutch, with their great overseas possessions, and there are poor nations with no possessions outside their own boundaries, and, within nations, there are wealthy classes and poor classes. The struggle has been regarded as one between the 'haves' and the 'have nots.' But the issues lie even deeper than that. Spiritual values have changed and new ideas and ideals have appeared which cannot easily be adjusted to the old social and economic order. Already three great nations—Russia, Germany, and Italy—have completely broken with the economy of the past.

Our own nation, with its tradition of democracy and free speech and discussion, is probably the most stable social system in the world, because, in spite of all the faults of our social and economic system, new wealth is slowly filtering through and becoming distributed among all classes, as is evidenced by the great rise in the standard of living which has taken place since the beginning of the present century. But it is realised that after the war there must be a period of rapid reconstruction which will involve changes. It will be difficult to get the necessary changes carried through with the minimum of dislocation. The National Exchequer will be depleted; there may be unemployment to an extent which we have never experienced in the past; there may be economic distress and social unrest. There will probably be general food shortage in Europe, and there may be shortage and high prices here. A food policy which would ensure that every person had sufficient for his needs, whether employed or unemployed, would go far to stabilise conditions and carry us through the difficult post-war period. Agriculture in this country is essentially food production. Our agricultural war policy, therefore, should do more than to provide merely a temporary increase of food to meet war needs. It should be part, and the most important part, of a long-range food policy which will carry us through the war and through the equally difficult period of post-war reconstruction.

There are now several powerful agricultural organisations—*e.g.*, the "Highland" Society, the National Farmers' Union and the Chamber of Agriculture, which have wisely joined forces, the Farm Servants' Union, the Colleges of Agriculture, and the Research Institutes. If these could be brought into closer contact and co-operate in planning agriculture for the future, planning not merely in the interest of agriculture itself, but planning for an agriculture which would form a stable basis for national reconstruction to post-war needs, they could make a valuable contribution to the forces making for stability and a smooth evolution along sound lines. A movement in that direction was made by the Scottish National Development Council in 1933, when a Committee representing all these bodies, with Lord Elgin as Chairman, examined Scottish agriculture in the light of all national needs. The findings and recommendations of that Committee would make a good starting-point for another inquiry in the light of the much more urgent needs of to-day. The "Highland" Society, with its great tradition and prestige, might well take a lead in this direction. Its disinterested work for promoting the welfare of all people engaged in agriculture, from the farm servant to the laird, and of agricultural education and science, gives it the background and authority which no other agricultural organisation has. Further, it would be in accordance with the original purposes of the Society. It was established to deal not only with agriculture, but with everything affecting the welfare of the people on the land. It promoted rural industries and concerned itself with the standard of living and culture. It can, therefore, take a broader view than any other agricultural organisation.

This long-range planning is urgently needed at the present time. Legislation affecting agriculture is too apt to be based on political exigencies to meet immediate difficulties. As a result we have had, in the last ten years, a heterogeneous collection of measures affecting agriculture, but no agricultural policy and no study of agriculture in relation to other national needs. All war measures should be considered in the light of their effect in the post-war period. They should be directed towards making agriculture permanently prosperous and providing sufficient food for the whole population. A flourishing agriculture and a healthy, well-fed population are the only sound basis of national prosperity and stability for our social and economic system. We have the opportunity to plan for that now. It will be too late to begin planning in the middle of the dislocations and disturbances which are inevitable when the war finishes.

IMMEDIATE EFFECTS OF THE WAR.

At the time of writing, the Government has not announced any very definite policy for agriculture except the ploughing up of an additional two million acres and a promise that prices will be sufficient to cover costs. There is as yet no indication what prices will be and no guidance as to what crops should be grown. Official pronouncements that agriculture will get a fair deal and will not be 'let down' after the war are not sufficient to give the industry the confidence needed to enable it to plan for the future. It is, therefore, impossible to predict, except in general terms from the experience of the last war, what effects the present war will have. Some of the immediate effects, however, are already apparent.

RISE IN PRICES.

The first effect of the war has been, as expected, a rise in prices. In peace-time, prices were controlled by the competition of overseas producers. War removes this competition. The fall in the value of the pound raises the prices of agricultural produce in the country of origin. They are raised still further by the great increase in freights. The cost of transport is now two or three times as high as it was before the war broke. Even though the Government does its utmost to stabilise prices it will be difficult, if not impossible, to prevent prices rising still further. As war expenditure increases, the value of money must inevitably fall. As the value of the pound falls, prices will rise.

Apart altogether from monetary causes, a rise in prices of agricultural products must accompany increased production. The cost of production is lowest on the best lands. As prices fall it becomes unprofitable to work the poorer lands, and the cultivated area contracts on to the most fertile lands or those having special advantages, such as easy and cheap access to markets. As production increases we must move on to the less profitable marginal land, and the price of agricultural products must increase to cover the higher cost of production on the new land brought into cultivation. In this respect agriculture differs from most other industries where the cost of production per unit falls as output increases. For most agricultural products in this country, costs are reduced when production is slowed down. Therefore, apart from a rise in prices due to a fall in the value of money, which is a fictitious rise, there will be a real rise in prices accompanying increased production, with the extension of the area under cultivation to include marginal land which had been allowed to go out of cultivation with the post-war fall in prices.

The difference in cost of production on different farms forms one of the most difficult problems in fixing reasonable prices. If the prices are sufficient to cover the cost of production and leave a reasonable profit on poor land, they will leave an excessive profit on the highly fertile land. The present subsidy of £2 per acre for ploughing up old pasture and the subsidy for lime and slag help to compensate for the increased cost of production on the marginal land being brought into cultivation. It is doubtful, however, whether the compensation is sufficient to ensure that the land once broken up will be kept in cultivation. This is a problem which calls for study in any long-range planning.

Farmers would be ill-advised to regard the sudden rise in prices as an increase in real wealth. The value of a cow may rise from £25 to £50, but it is still the same cow. The change is not so much in the value of the cow as in the value of the money. In the last war the great rise in prices followed by the post-war slump brought ruin to many farmers, especially those who bought their farms or who went into farming when prices were at their peak. What agriculture needs is not temporary exorbitant prices, which will be followed by a slump, but permanent prices which will cover the cost of production of farms managed with average efficiency and leave a reasonable margin which should be applied to improving farms to increase their efficiency. With no certainty that prices will be maintained high enough to keep marginal land in cultivation, farmers would be well advised to plough as much of their profits as possible back into their farms. Improvements in fencing, draining, buildings and equipment, and in soil fertility is the safest form of investment for whatever surplus profits agriculture may make during the war.

INCREASED PRODUCTION.

Home production must be increased to meet increased food requirements during the war and to replace decreased imports. Though little attention has been given to increased war requirements, the amount of the increase is quite considerable. The calorie[1] requirements of an unemployed man or one in a sedentary occupation, who takes little muscular exercise, are not more than 2250-2500 calories per day. Manual workers need about 3500 and soldiers about 4000. Before the war finishes we may have between three and four million men under arms, and practically the whole of the unemployed who are employable will be engaged in industry. The resulting increase in food requirements will amount to between 5 and 10 per cent. Hence, even if home production and imports were maintained at the same level as during peace-time, there would still be a food shortage during the war. As home production accounts for only about one-third of the total food consumed, it would need to be increased by about 20 per cent to make up the increased requirements, even if imports were maintained at the peace-time level. In the last war the increase in the output of home-grown food in 1918 amounted only to about 8 per cent of the total food requirements, which did little more than meet the increased requirements due to the war. It is estimated that at the end of the last war the total national food supply was actually slightly greater than in peace-time. The food shortage was due, therefore, not so much to a decrease in the supply as to an increase in the amount needed due to increased consumption.

---

[1] The calorie is the unit used for measuring energy requirements, human and animal, and the energy-yielding value of foods. The number of calories stated indicates the total amount of food needed.

There is another aspect of food requirements which may become of importance to agriculture as the war continues. In addition to supplying the amount of food needed, the diet must supply proteins, vitamins, and minerals, which are needed to maintain health and physical fitness. Foodstuffs—*e.g.*, milk, dairy products, fruit, vegetables, and eggs, which supply these in abundance, are called 'protective' foods, because they protect the body against disease and ill-health. Dietary surveys, such as those recorded in 'Food, Health, and Income' (1935), and the more recent one by Sir William Crawford (1938), show that the consumption of protective foods among the poorest third of the population is too low for health. In recent years, by the issue of milk and other protective foods, free or at reduced prices, at public health centres and by free meals and cheap milk at schools, there has been an improvement in the diet of the poorer part of the population, with a corresponding improvement in health. It looks as if victory in the present war will depend to a very large extent upon the morale and staying power of the civilian population. These depend upon health and physical fitness. The Advisory Committee on Nutrition, which the Government set up five years ago, strongly recommended increased consumption of milk as a first step towards the improvement of national health. They recommended that the first objective of any Government measure affecting milk should be to make 1½ pints of milk per head per day available for every child. Amongst the poorest section of the population consumption is not more than ¼-pint per head. The Government have already subsidised Milk Marketing Boards to prevent the necessity for a rise in prices which would decrease consumption amongst the poor. Further measures are at present being considered to reduce the retail price for those who would benefit by increased consumption. It is probable that by the time this article appears a scheme to effect this may be in operation.

The food of next importance for health is vegetables, including potatoes. The campaign for the increase of allotments and for vegetable growing in gardens will increase the output of vegetables and potatoes. It is estimated that nearly half of the vegetables consumed in this country are produced in gardens and allotments. The increase, however, from these will not be sufficient to meet the needs of the city population. There may be a call for increased production on the farms, especially for canning and drying, to maintain consumption in winter. Such information as can be obtained on the war food policy of Germany seems to indicate that the Nazi régime has appreciated the importance of these agricultural products. Their policy seems to be to provide these in abundance and to keep the price as low as possible. Before the war the average consumption of potatoes in Germany was 16 oz. per head per day, compared with 9 oz. in this country, and special arrangements were made for ensuring a high milk consumption amongst mothers and children. Our Government is becoming aware of the importance of food for health. A campaign for increased consumption of home-produced foods of special value for health is to be launched by the Ministry of Food in the spring. If the campaign is as successful as it should be, there will be an increased consumption of milk, vegetables, potatoes, and probably also of oatmeal, which is of greater value for health than wheat flour.

Apart from the health aspect, a policy of increased consumption of these foods, which we can produce in sufficient amounts to meet the needs of the whole population, is a sound war policy, because an acre of land yields more food in the form of potatoes and some of the common vegetables than it does in grain, and the dairy cow is the most efficient transformer of feeding-stuffs. A policy for increased production of these would be one which could be carried on after the war and so help to prevent a post-war slump. The increased consumption of these foods should be maintained for national health reasons, and British agriculture can produce these more cheaply than they can be imported.

Even though we increase home production to the utmost, and arrange to produce foods which would give us the maximum output per acre, we must continue to be dependent upon imports. The following table shows all home-produced and imported food and animal feeding-stuffs :—

PRODUCTION AND IMPORTS OF HUMAN FOOD AND ANIMAL FEEDING-STUFFS TO THE UNITED KINGDOM, 1937-38.

	Home produced.	Imported.	Total.
Human Foods.	Thous. tons.	Thous. tons.	Thous. tons.
Wheat (as flour)	767	3,197	3,964
Sugar	469	1,618	2,087
Butter	45	472	517
Cheese	37	146	183
Eggs	409	190	599
Milk, condensed	188	103	291
Beef and mutton	918	1,007	1,925
Bacon and ham	151	325	476
Fruit and nuts	661	1,948	2,609
Milk, fresh	4,556	..	4,556
Vegetables	1,871[1]	644	2,515
Potatoes	4,400	145	4,545
Other cereals	128	237	365
Miscellaneous	437	921	1,358
Total	15,037	10,953	25,990
Concentrates for Animals.	Thous. tons dry matter.	Thous. tons dry matter.	Thous. tons dry matter.
Grain, milling offal	2,291	6,579	8,870
Oil cake	..	1,573	1,573
Miscellaneous (meat meal, molasses, &c.)	250	390	640
Total	2,541	8,542	11,083

The table does not include grass and home-produced fodder crops, which amount to between 25 and 30 million tons per annum. Reckoned in bulk, home-produced foods and feeding-stuffs exceed imports, but bulk is not a true indication of the relative amounts of food. Speaking broadly, the bulky foods, such as potatoes, liquid milk, and vegetables and fodder crops, are produced at home, and the more concentrated foods, such as wheat, sugar, fats, butter and cheese, and concentrates for animal feeding, are imported. If we take the true index—viz., the calorie or unit of food value—home production is estimated to provide somewhere between 32 and 35 per cent of our total supply.

It takes about 20 million tons of shipping out of a total of 47 million tons per annum to import our food and feeding-stuffs. So far, the Navy has been successful in enabling imports to be maintained, with the exception of feeding-stuffs. These are uneconomical to import on account of the big shipping space required in terms of the human food they produce. The following table shows the number of lbs. of feeding-stuffs required to produce 1 lb. of human food, both reckoned as dry matter. The figures are only approximate, because efficiency in transforming food depends upon the rate of production or the rate of growth of the animal :—

---

[1] This figure is an estimate of the Food (Defence Plans) Department for the years 1934-36. It is impossible to give an exact figure because there are no returns for vegetables grown in gardens and allotments.

Milk cow	5 lb.
Pig	8 ,,
Hen	15 ,,
Beef cattle	20 ,,

Immediately the war broke there was a shortage of feeding-stuffs. This is likely to continue, because it is obviously more economical of shipping space to import the finished product than to import feeding-stuffs.

If the shipping position should become serious, either through sinking ships or through ships being required for importing war materials, imports will be more and more restricted to foods which have a high food value per unit shipping space, and if, as will be the case if the war continues for a number of years, we must exercise the utmost economy in using foreign credits, imports will more and more be restricted to the foods which are cheapest to purchase abroad. The following table shows the relative storage space, food value, and approximate cost per 100,000 calories of the main foods we import :—

	Approx. shipping space. Cub. ft. per ton.	Approx. energy value: thous. cals. per cub. ft. shipping space.	Cost of 100,000 cals., estimated from trade statistics.
Wheat (bulk)	50	56	5/5
Sugar	45	83	4/3
Fats and tallow (in barrel)	80	118	8/4
Dried fruits	50	55	21/–
Butter	55	143	27/3
Cheese	60	56	39/4
Bacon	110	39	35/9
Frozen beef	95	26	40/2
Eggs in shell	120	12	74/5

It is seen that wheat, sugar, and fats are the cheapest foods and those which occupy the smallest shipping space per unit value. If, as Keynes the economist has suggested, we should come down to a national iron ration, these are the three foods which are likely to be chosen for the imported part of the iron ration.

With a planned food scheme home production would be adjusted to fit in with imports. It is impossible, without loss of output, to make any sudden change in agricultural practice. Practically all that was being produced in peacetime should continue to be produced. We have, however, a choice in deciding the nature of the additional production. If priority in imports were given to wheat, sugar, and fats, then priority for additional home production should be given to potatoes, vegetables, and milk, because these six foods, together with oatmeal, of which there is already sufficient produced at home to meet human needs, supply all the nutrients the body needs to maintain it in perfect health. Next in order of priority would probably come sugar-beet. Like the potato it gives more than twice the yield of food per acre that grain does, and the beet pulp and tops are valuable feeding-stuffs. Next to sugar-beet would come fodder crops to help to make good the deficiency in imported concentrates. In the allocation of concentrates, priority would be given to the dairy cow. Next would probably come poultry. Although the hen is a less efficient transformer than the pig, eggs are of higher nutritive value than bacon, and they are more difficult to import. Further, with the Lehmann system of feeding, pigs can be fed with small amounts of concentrates, whereas it is difficult to replace cereals in the feeding of poultry.

PRICE REGULATION OF PRODUCTION.

The only way to get the foodstuffs we need is to offer the farmer a guaranteed market and a guaranteed known price. Promises to pay prices which will cover the cost of production are too vague, because the cost of production varies by as much as 100 per cent on different farms. The farmer knows he will get a price to cover the cost of production on good land. But if production is to be increased he must move on to marginal land which went out of cultivation because the cost of production was too high. The price offered for the product will determine the extent to which the farmer is induced to bring the less profitable land into cultivation. Until he knows what the price will be he cannot decide the extent to which he should extend his operations. Further, once he breaks in new land or extends production in any other direction he must have a guarantee for several years ahead, to enable him to complete the rotation in cropping and warrant the increased expenditure involved in additional equipment and other outlays involved in changing over to a policy of increased output. The farmer produces for profit.

If he cannot see profits, exhortations or appeals to patriotism cannot be expected to make him increase production. In the last war, in spite of exhortations by the Government and recommendations by Committees, there was no marked increase in production until 1917. On 23rd February of that year Mr Lloyd George, realising the seriousness of the food position, gave a guarantee of £6 a ton for potatoes and 60s. a quarter for wheat. The guarantee was given too late to have its full effect in 1917. The full effect, however, was seen in 1918. The following table shows the extent to which output was increased in 1917 and 1918 :—

INCREASE IN PRODUCTION OF WHEAT AND POTATOES IN THE 1914-18 WAR.

	1914.	1915.	1916.	1917.	1918.	1918 as percentage of average, 1914-16.
Wheat—million qrs. .	7·80	9·24	7·47	8·04	11·64	142
Potatoes—million tons .	7·48	7·54	5·47	8·60	9·22	135

The guarantee of prices was effective in producing in 1918 4,188,000 quarters of wheat and 2,608,000 tons of potatoes above the average of the five pre-war years. Reviewing the agricultural position during the war, Mr James Cruickshank in 1919 shows that the increased production was got only by the guaranteed prices which gave the farmer the inducement of a profit which warranted him taking the risks of increasing production. He says: "The amazing thing is that it took the Government, with all its expert advisers, nearly three years of war conditions to learn and understand that elementary fact."

It is difficult to set limits of the extent to which production could be increased. The only practical limit at the present time is the price offered. The nature of the increase is also determined by the price. The nation will get as much or as little of any product as it wants by raising or lowering the price offered. Adjusting the prices offered for the different products in the proper proportion to each other will result in their being produced in the proportions we need. If there were a system of price regulations, designed to call forth the different foodstuffs we need in the right proportion, with a guarantee that they would be maintained for a series of years, each farmer would adjust his output to suit what his farm could best produce, and the total output of all farmers would be the foods which the nation requires. So far, thanks to the

Navy, there has been no shortage of food. If, however, the war should be prolonged and the food position became serious, it is almost certain that the Government would be forced to take the line adopted by Mr Lloyd George in 1917 and offer definite guaranteed prices, big enough to call forth the additional foods needed.

CHANGES IN FARM PRACTICE.

Whatever course the Government adopts towards agriculture during the war, there will be certain changes in farm practice. Owing to the shortage of imported concentrates, methods of feeding are being devised to replace these by home-grown fodders. Good results have been reported in feeding pigs with the minimum of concentrates, the rest of the ration consisting of roots, silage, cabbage, kale and other roughage, and feeding experiments are at present being done to ascertain the extent to which grain can be reduced in the poultry ration. Other experiments are being done to ascertain the extent to which the digestibility and utilisation of straw can be increased by treatment with acids or alkalis. These expedients for economising on concentrates were all known before. They were not used because they involved more labour, and, with an abundant supply of cheap concentrates, they were not economical. They can only be used to advantage when the price of concentrates is very high in proportion to labour costs and the value of the product. So soon as the acute shortage of feeding-stuffs disappears after the war, these emergency methods of feeding will give place to the established pre-war methods.

The only changes in practice which are likely to be permanent after the war are those which would have taken place in any case. All the war will do will be to accelerate the change. One of these changes is the better utilisation of pastures. Shortage of feeding-stuffs will stimulate improvements in the management of pastures. By proper use of fertilisers and management of grazing, the yield of much of our pastures could be increased probably by as much as 50 per cent. Surplus grass at the flush of growth, which is often largely wasted, can now be conserved for winter feeding as dried grass or as grass silage. Opinion is still divided as to the relative values of these. The general results of a number of years' study at this Institute has led us to the conclusion that grass drying is unlikely to be an economical process except under specially favourable conditions, whereas grass silage, which can be made on almost any farm with little or no additional equipment, is an economical process even with an abundant supply of concentrates at pre-war prices. The value of the silage depends upon the stage of the cutting of the grass and the method of making. With high-grade grass silage, made without molasses or any other ingredient, it has been found possible on the Duthie Farm to feed cows, with a yield of five gallons a day, on nothing but grass silage. This method of using surplus grass is likely to extend and to mark a permanent change in agricultural practice. In the attempt to get two million more acres pasture land ploughed up, there may be a danger of ploughing up the wrong kind of pastures. Old, deteriorated pastures will pay for ploughing up ; but, with a shortage of concentrates, the ploughing up of good pasture land is of doubtful value. Much of it will be laid down in oats and give a yield of about one ton per acre, which will be used for winter feeding. About five tons of grass silage is equal in value to one ton of oats, and on good pastures as much as ten tons of silage may be made per acre. Good pasture land may, therefore, be ploughed up and actually yield less food than if it had been left in grass.

Another change which will tend to be permanent is increased mechanisation. That has been going on rapidly in recent years. The war will cause a shortage of labour. Even if agricultural workers be exempted, the high wages being paid in munition works and other industries will tend to draw off some of the older men who are over the age for service. Every device, therefore, which will reduce manual labour is likely to be employed and to be permanent.

It is premature to discuss possible changes in agricultural organisation. During the war, industry will pass more and more under the control of officials and of the large firms supplying feeding-stuffs, seeds and manures, and buying the output from the farm. This is all to the advantage of the firms concerned, because their profits are assured, and, to a very large extent, are determined on figures supplied by themselves. They will be in favour of continuing the system, and, if guaranteed prices were given which involve subsidy from the Treasury, the Government will naturally insist on exercising some form of control through its officials. The war, therefore, will likely leave behind it permanent organisations which will impose further limits on the farmer's choice of merchants and markets. The extent to which the new organisation will benefit the farmer will depend very largely upon the influence which farmers themselves bring to bear upon the post-war adjustments of war-time organisations.

POST-WAR CHANGES.

The slump in prices after the last war is still fresh in the minds of farmers. The Government has promised that farmers will be given a fair deal and will not be 'let down' after this war. It is difficult to estimate the value of these promises. A different Government may be in power, and, even if the same Government is in power, conditions may be such that reasonable excuses could be offered for not treating agriculture in accordance with the farmers' interpretation of war-time official pronouncements. Before the war there were strong influences working against an expansion of British agriculture. In normal times our exports and the interest on our foreign investments are paid for largely by imported food, and about two-fifths of our shipping is occupied in carrying food. The financial interests concerned with these have a powerful political influence. Hence, after the war, when increased home production is no longer needed, these influences are likely to be brought to bear in reducing agriculture to its peace-time level of output. It may be unfortunate for many farmers, who have gone to the expense of breaking up large tracts of less productive land and providing themselves with the necessary equipment to keep it in cultivation, to find that the produce from that land is no longer needed. Indeed, this might occur to some extent during the war. We are making large purchases of foodstuffs from neutral countries to prevent them from falling into the hands of the enemy. If the Navy is as successful in keeping the seas open as it has been, there may be no shortage of some foods, in which case there is not the same need for paying the prices needed to increase home production.

If the increased production is wanted only during the war, the Government must pay a price high enough to cover the cost involved in the dislocation of the industry due to the war and the dislocation due to post-war readjustment to the peace-time level of production. On the other hand, if the increased production is to be permanent a lower price would suffice. The Government must make up its mind what amounts of the different foods it wishes British agriculture to produce and whether or not it wishes these amounts of foods to continue to be produced after the war. But this would involve a long-term agricultural policy which would reconcile all national interests concerned with food. There is little hope of such a policy emanating from Whitehall, because, in normal times, there is no single minister responsible for food. The Minister of Agriculture deals only with home production, and, in trying to do anything for agriculture, has to fight other interests. The weakness of the position has been shown by the war. A special Ministry of Food had to be set up, and even it has not been able to deal with the situation. It has been necessary to appoint the Lord Privy Seal as Chairman of a group of Ministers dealing with food. The Ministers concerned are all already over-worked, and for most of them —as, for example, the Secretary of State for Scotland—food forms only a relatively small part of their duties. When the war finishes, this emergency attempt to get some sort of co-ordinated food policy will come to an end. Harassed as the Ministers are with the immediate war problems, it is very doubtful whether they will give much consideration to a long-range agricultural policy, or even to the post-war effects of emergency food measures.

If we are to have a permanent policy for agriculture, it will need to be evolved not by politicians but by the farmers themselves. In the past the objectives they have fought for, such as a guaranteed price for oats or a higher subsidy for cattle, were far too limited and they were considered neither in relation to each other nor in relation to agriculture as a whole. We have had ten years hand-to-mouth 'trial and error' expedients, followed now by war emergency measures. If we are to escape the post-war slump we should be working now towards a permanent agricultural policy based on national food requirements. The Astor-Rowntree inquiry, which was the most exhaustive investigation and is the most authoritative statement on agriculture in relation to national needs, showed that a food policy based on nutritional needs involves increased home production without a decrease in our imports which would interfere with our exporting industries or overseas investments. If all the different agricultural organisations referred to in the opening paragraph could get together and prepare a policy which they could present to whatever Government would be in power at the end of the war, there would be a good chance of having the policy adopted. A national food policy based on human needs would have the support of the consumers and also of social reformers and 'planners,' who realise that a flourishing countryside and a well-fed population are the only basis for social and economic stability.

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STOCK-FEEDING UNDER WAR CONDITIONS.

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UNDER present conditions the stock-feeder is faced with many difficult problems. This paper does not attempt to cover them all, but deals with some of the more general points, and also attempts to make particular suggestions about the feeding of sheep and pigs.

It is well known that our herds and flocks, in normal times, depend to a considerable extent upon supplies of imported feeding-stuffs. The extent of this dependence was fully discussed by Dr Norman C. Wright in the 'Transactions' for 1938 (Vol. L.), and the reader may consult that article for detailed facts and figures. Briefly, the position in peace time (the figures are for 1935) was that Great Britain produced fully three-quarters of its total requirements of stock food, reckoned in terms of actual food values. Our home produce was, however, very largely in the form of pasture grass, roots, hay, straw, and other relatively bulky foods, and by far the greater part of our requirements in the way of concentrates was met by imports. Dr Wright's figures for supplies of concentrated feeding-stuffs were :—

	Millions of Tons.
Home-grown cereals, including wheat offals . .	2·97
Imported maize and maize products . . .	2·97
Imported cereals other than maize, including wheat offals	3·04
Imported oil-seeds and oil-cakes	1·73
Total . . .	10·71

Thus, in terms of total quantities, we produced at home only 27 per cent of the concentrates fed to our stock, and imported the remaining 73 per cent, or nearly three-fourths. This figure is not materially altered if we calculate in terms of food values (starch equivalent and protein equivalent). As regards the distribution of total concentrates between the different types of stock, Dr Wright's figures are as follows; they are reckoned in terms of energy values (starch equivalents).

	Consumption of Concentrates (Millions of Tons of Starch Equivalent).	Percentage of Total.
Dairy cattle	1·06	15·4
Beef cattle	1·07	15·5
Sheep	0·94	13·6
Horses	0·57	8·3
Pigs	1·62	23·4
Poultry	1·65	23·8
Total	6·91	100·0

The large consumption by pigs and poultry, and the small consumption by sheep, are noteworthy.

Stock owners are already painfully aware of the difficulty of making do with restricted amounts of imported feeding-stuffs, and are fully alive to the necessity of making their farms more self-supporting. If war-time imports could be predicted with any certainty, farmers would know where they stood, and would be able, each for himself, to draw up a plan of action. Unfortunately there are so many uncertainties in the outlook that any such detailed planning is out of the question. There may be more or less interference with our shipping, either in port or on the high seas, while other imports, in greater or less amount, may have to take precedence over feeding-stuffs. Again, the longer the war continues the more necessary will it become to conserve our supplies of foreign credit—*i.e.*, money rather than shipping may become the main consideration. All that we can safely assume is that imports of feeding-stuffs will remain below normal until some time after the conclusion of peace. It is probable, also, that feeding-stuff prices will remain, for some time after the war, at levels considerably higher than those to which we have been accustomed in recent years. Finally our agriculture, like every other department of the national industry, must be planned on the assumption that the war may be long, and on the principle of erring on the safe side.

It is perhaps worth speculating about the relative scarcity that may be expected in each of the two main classes of foods—*i.e.*, the starchy foods such as maize and barley on the one hand and, on the other, the protein-rich foods such as the common oil-cakes. The former are imported mainly for stock-feeding purposes rather than for manufacture.

The amounts of by-products from imported cereals (*e.g.*, maize gluten feed, maize germ meal, and distillery grains from imported maize and barley) are of rather minor importance. On the other hand, large quantities of oil-seeds are imported primarily as sources of oil for the manufacture of soap, margarine, &c.; the oil-cakes represent a by-product. With the increased demand for some of the oils, it may be expected that oil-seed imports will be fairly well maintained, and that cakes will continue to be available in considerable quantity.

The problem of making do with smaller imports may be attacked from three directions. Firstly, we must try to make fuller use, in feeding, of the produce of our farms; secondly, we must try to increase our acreage of the more productive crops; and thirdly, if and when we are obliged to reduce the number of mouths, we must try to do so upon some carefully thought-out plan.

On all these aspects of the problem there are certain useful lessons to be learnt from Germany, where, as is well known, the most strenuous efforts have been made, over a period of several years, to reduce that country's dependence upon imports.

THE UTILISATION OF STRAW.

One of the few materials that will be available during war in largely increased quantities is straw, and it seems that many farmers will have larger quantities available than can be put to good use for ordinary purposes—*i.e.*, as litter or as fodder for cattle. It has been shown, both in Germany and in this country, that the nutritive value of straw can be increased, and its possible uses multiplied, if it is put through a simple and comparatively inexpensive process.

Straw consists mainly of cellulose, a substance with the same general composition as starch, and having the same gross energy value or heat-producing power. In so far as it is digested by the animal, it has about the same food value as starch, but its digestibility is very variable. On the one hand animals with simple digestive apparatus (such as pigs and poultry) pass out in their dung a large proportion of the cellulose (fibre) of their food, whereas cattle, sheep, and horses can digest certain forms of cellulose very well. A further important point in relation to its digestibility is the form in which the cellulose occurs in the plant. All plant cells are enclosed in a wall of cellulose which, at first, is thin and soft, and hence easy to break down. In parts of the plant where strengthening tissue is not required—*e.g.*, in a turnip or a sugar-beet—the bulk of the cells remain in this condition. In a tree, on the other hand, the cell walls quickly thicken and lignify (turn into a woody type of cellulose), and become very indigestible. The point may be illustrated by comparing beet pulp with sawdust. Both consist largely of cellulose, but whereas the one is a valuable food for cattle and sheep the other is useless, or actually worse than useless, as a food for any animal.

In ordinary cereal straw the cellulose is partly of the one kind and partly of the other, the degree of lignification showing a good deal of variation. In wheat and rye the process goes far, and the straw of these crops is of low digestibility. In barley and especially in oats the change is less complete, and the food value is consequently higher. Another point is that lignification takes place mostly in the last stages of ripening, and goes on faster under hot and dry conditions. Hence, as is well known, oat straw from the north of Scotland is better than oat straw from the south-east of England, and, as is equally well known, any straw is of better feeding value if the crop has been cut somewhat green rather than dead ripe.

In any straw there is, in fact, a large amount of primary or unlignified cellulose which, if it could be freely exposed to the digestive processes, would be largely digested by cattle, sheep, and horses. But the softer tissues are enclosed and protected by the woody portions and especially by the outer skin, which is not only heavily lignified but contains a good deal of silica—the mineral that makes up the bulk of ordinary sand.

Cellulose, even in the form of sawdust, can be converted into sugar, and the process, though it is costly, is apparently being used to some small extent in Germany; at any rate, experiments have been carried out in the use of wood-sugar for pig-feeding. By much simpler means the tissues of the straw can be induced to soften and swell, and at the same time the silica can be dissolved out. This has been known for many years—indeed in the last war many thousands of tons of treated straw were produced and fed in Germany.

Recently a good deal of experimental work has been done on the process in this country—by Dr Godden of the Rowett Institute and, at the instigation of Dr R. E. Slade, by Dr S. J. Watson at Jealott's Hill, the research station of Imperial Chemical Industries Ltd. The latter has explored the possibilities both of a small-scale plant for the farm and of factory-scale plants which might be set up (possibly in conjunction with beet-sugar factories) in those parts of England where there is a surplus of straw even in ordinary times.

Among the many processes that have been tried, some involving high temperatures and pressures, it seems that the soaking of the straw in a cold solution of caustic soda is nearly as effective as any. The procedure is first to chop the straw and then to soak it for about twenty hours in a 1½ per cent solution of caustic soda. At the end of this time the solution is drawn off and retained for further use; the straw is then thoroughly washed with cold water, the first of the washings being retained because it contains an appreciable amount of soda. The washed material, which contains about 20 per cent of dry matter, is ready for feeding.

Coming to details, the one alternative is to carry out the process in a single tank which may be of ungalvanised iron (soda attacks zinc) or concrete. Soda has no action on concrete, and the type of tank required would be easier to construct, by means of farm labour, than *e.g.*, a sheep dipper. The amount of soda solution required approaches one gallon for each pound of straw. Thus to treat 200 pounds of straw daily (which would provide a daily ration for about twenty feeding cattle) the tank should hold 200 gallons without risk of spilling. For convenience in handling, stirring, and draining, a long, narrow, and fairly shallow tank is best. To obtain 200 gallons' capacity when filled to within nine inches of the brim, the tank might be 12 ft. long, 2 ft. 6 in. wide, and 2 ft. deep. The bottom should have a slight slope from end to end, and there should be a V-shaped gutter along the bottom to assist drainage. This gutter should be covered with a small-mesh grid, or a sheet of perforated iron, to prevent its blocking.

With the single-tank system there must be a sump of the same capacity as the tank, with preferably a hand-pump to lift the solution from the sump back into the tank.

The procedure in operating the plant is as follows. Two hundred gallons of water is run into the tank and 30 lb. of caustic soda, in flake form, is dissolved in it. Two hundred pounds of chopped straw is now added, and the mixture is well stirred. On the following day (after about twenty hours) the pipe connecting to the sump is opened, and the solution is allowed to drain off. The treated straw is now sprayed with water, and the washings are allowed to run into the sump until the latter contains 200 gallons. When the sump is full the remaining washings are allowed to run to waste. About 'five waters' are required to ensure that the soda will be completely removed, and the washing should not be hurried, but should be done at intervals over a period of some three hours. When washing is complete the pulp is removed in pails or feeding-boxes, and may be fed either immediately or later; it will keep fresh, if desired, for two or three days.

The next batch of chopped straw is now placed in the tank. The solution in the sump is brought up to strength by adding about fifteen pounds of soda, and it is then pumped back into the tank. The process is repeated for the next day's supply. Once a week the whole of the stale solution is allowed to run to waste and a fresh start is made.

An alternative system is to use two tanks, one for soaking and another for washing. A convenient arrangement is to have these placed parallel to each other, with the washing-tank at a higher level than the other, and with a sloping concrete ramp, about seven feet wide, between the two. The straw pulp, after soaking, is thrown on to the concrete ramp to drain, and is afterwards pushed into the upper tank for washing. Complete instructions for building and running such a plant have been drawn up by Imperial Chemical Industries.

The soda solution is not dangerous to work with if due precautions are taken. Care must be taken to prevent the access of animals to it, as if drunk it would cause severe burns to the gullet, and might very likely be fatal. A splash of the liquor in the eye might cause blindness unless immediate treatment was given. In case of such an accident the worker should lie down and water should be poured from a jug into the eye over a period of an hour. The liquor will also cause burns on the skin unless it is thoroughly and immediately washed.

The liquid freezes at a few degrees below the freezing-point of water, so that the plant should be under cover. Obviously, a plentiful supply of water is essential, for the treatment of every pound of straw requires a gallon of solution, and the proper washing of the product requires two or three gallons more. One other point is that the crude washing water will kill fish if it is allowed to run direct into streams. A soak-away should therefore be provided.

As regards costs, detailed figures are not yet available, but a fairly close estimate may be made. At the time of writing (February 1940) caustic soda in suitable flake form can be bought at 13s. per cwt. On the single-tank system described above, the consumption of soda is about 190 lb. for each ton of straw treated. The cost of material would thus be 22s. per ton. To this we may add, perhaps, 5s. per ton for chopping the straw and probably less than 10s. per ton for labour; the latter figure assumes that about an hour a day would be spent in running a plant of the size that has been used as an example. A larger plant would no doubt give a lower labour cost per ton. Where water is paid for by volume, the cost of this must be added. The amount required will be six or seven thousand gallons per ton of straw treated.

The capital cost of the plant is obviously small; if gravel and sand can be obtained locally and if the concrete work can be done by farm labour, the direct expense (for cement and a small hand-pump) need not exceed seven or eight pounds. At the other extreme, the cost by contract might be nearly £20. The charge for interest and depreciation would in any case be practically negligible. The total cost of the process is therefore estimated at 37s. per ton of straw.

As regards the gain in food value, allowance must first be made for a loss of dry matter—some of the substance of the straw dissolves in the soda and is run to waste. This amounts to nearly 20 per cent. In other words, a ton of straw containing fully 17 cwt. of dry matter will yield about 3½ tons of wet straw-pulp, containing about 14 cwt. of dry matter. On the other hand there is a very marked gain in digestibility, and hence in food value. Dr S. J. Watson finds that average wheat straw, which has a starch equivalent of about 13 lb. per 100 lb. dry matter, yields a pulp with a starch equivalent of fully 40 lb. per 100 lb. dry matter. The corresponding figures for good oat straw, on a dry matter basis, are about 22 and fully 55. The total starch equivalent is thus increased, in the case of wheat straw, to fully two and a half times the original figure and, in that of good oat straw, is fully doubled. There is, of course, the further practical point that a very bulky food, with very limited uses on the farm, is converted into a fairly concentrated one which can be put to a variety of uses. The product from wheat straw is of about the same concentration (starch equivalent in relation to dry matter) as really good hay. The product from good oat straw is little inferior to beet pulp.

The economics of the process will, of course, depend upon the value assumed for straw, on the market prices of feeding-stuffs and on the profits to be expected by keeping stock which otherwise, owing to shortage of feeding-stuffs, might have to be sold. If, however, we assume a flat-rate value of 2s. 6d. per unit of starch equivalent (implying that oats are worth about £8, 10s. per ton, beet pulp about £8, and good hay about £5), the calculations would be as follows:—

AVERAGE WHEAT STRAW—

Costs—			
One ton straw	£1	8	0
Treatment (materials and labour)	1	17	0
Total	£3	5	0
Value—			
14 cwt. dry matter as pulp at £5 per ton	3	10	0
Balance profit	£0	5	0

GOOD OAT STRAW—

Costs—			
One ton straw	£2	10	0
Treatment (materials and labour)	1	17	0
Total	£4	7	0
Value—			
14 cwt. dry matter as pulp at £6, 17s. 6d. per ton	4	16	3
Balance profit	£0	9	3

It thus cannot be claimed that, at the prices assumed, the process would be highly profitable. But it does seem to offer a very valuable means of utilising a by-product, of reducing the farmer's dependence upon his feeding-stuffs merchant, and of increasing production from our own soil.

It may be noted that the processed straw contains a negligible amount of protein. Straw contains but little protein originally, and most of this is dissolved by the soda solution and is lost. The material, fed in reasonable amounts, is quite palatable to both cattle and sheep. Feeding cattle of ordinary size will readily clear up about 50 lb. of wet pulp (containing about 10 lb. of dry matter) per day. Some experience will be required in compounding rations with the new material, but as a general guide it may be suggested that a 10-cwt. feeding bullock might have 50 lb. swedes, 50 lb. wet straw pulp, 5 or 6 lb. hay, and 2½-3 lb. of a high-protein cake such as decorticated earth-nut. This is calculated to produce a daily live-weight gain of 2 lb.

Finally, it should be noted that trials with straw pulp in pig-feeding have so far, as might indeed have been expected, given unpromising results. At the Rowett Institute trials with wheat straw have shown that, whereas the untreated straw has a *minus* food value (the pig spending more energy in trying to digest the straw than it gets back from the small amount actually digested), the treated material does, so to speak, yield a small balance of profit to the animal. But the material would, it seems, do little except to satisfy the animal's hunger.

PROTEIN SUBSTITUTES.

It is well known that one of the main difficulties encountered by Germany in her efforts to achieve self-sufficiency has been in the matter of oils and fats. This is because the main oil-seeds of commerce—palm-kernel, coconut, cotton, earth-nut, &c.—are produced by tropical plants. Some progress has been made with the production of soya beans in South Germany, but, in the main, the solution has been to resort to the strictest rationing of soap, margarine, and other products of vegetable oils. As a secondary result of the reduced supplies of oil-seeds there has been a great scarcity of oil-cakes, upon which the German farmers, like ourselves, used to rely for balancing their rations—*i.e.*, for getting the required proportion of protein or albuminoid.

In Germany the scarcity of oil-cakes has been met in part, but only in part, by changes in cropping—by growing larger acreages of beans, lupins, and other pulse crops, and by ensiling protein-rich herbage such as young grass or clovery aftermaths. As in this country, it has been found that the use of molasses in the making of such silage goes far to ensure a product of good quality.

For the rest, German nutrition chemists have been carrying out a most thorough search for protein substitutes, and they claim, in the case of the ruminant animal, a considerable measure of success.

It has long been known that the food of the ruminant, during the time that it remains in the paunch, undergoes bacterial fermentation. It is, in fact, largely by the help of bacteria that cattle and sheep are able to digest cellulose. But there is another side to the business, because the bacteria, in order to grow and multiply, require a supply of nitrogen compounds and, under ordinary circumstances, they use up part of the protein of the food. Thus there is a considerable wastage of protein in ruminant digestion.

The idea underlying the German work is to mix with any convenient food-stuff—beet pulp or compound cake—a certain amount of some cheap and simple synthetic nitrogen compound which the bacteria will feed upon in preference to the food protein. A variety of such substances have been tried, and of these urea, which can be very cheaply manufactured, seems to be almost as good as any. In Germany a large number of practical feeding trials have been carried out in which a properly balanced ordinary ration has been compared, on the one hand, with a protein-deficient ration, and, on the other, with this last fortified by the addition of urea. Most of the results show that the urea is a help—at any rate where the basal ration is extremely short of protein. On the other hand, some of the trials have shown that a considerable part of the urea is absorbed into the blood as such, and is quickly passed out again by the kidneys. If this happens, it is difficult to see what value the urea can have. On the whole, the case is scarcely proved, and some of the published results are not altogether free from the suspicion that they have been produced to order. The use of urea or some similar substance might be a possibility to bear in mind if we found ourselves in the same straits as those in which the German farmer finds himself at present, and meantime experiments are being carried out in this country. But it seems that our main problem will be to make good a deficiency of starchy rather than of high-protein foods, and that, in so far as we find it necessary to replace imported oil-cakes, we should aim at producing more home-grown foods of the types required, such as beans and silage.

The Use of Surplus and 'Broke' Potatoes.

The potato acreage in Germany is very large, and the crop is grown both for direct human consumption and for the manufacture of starch and alcohol. As in this country, the yield varies widely from year to year, and the surplus has often been considerable. Naturally then, the Germans have given a good deal of study to the utilisation of this surplus and also to the use, in animal feeding, of small, diseased, and otherwise damaged tubers. The chief difficulties are that the surplus often becomes available at a time when it is not wanted (*e.g.*, a surplus of old potatoes in June), and that 'broke' is subject to very heavy wastage if it is kept in pits, in the usual way, for any length of time.

The ideal method of conservation is, of course, artificial drying, but a special plant and a special process are necessary to the production of an easily digestible potato meal. The product of an improvised plant is likely to be unsatisfactory.

Where greenstuff is available, one of the most satisfactory methods is to make a mixed silage by the method that was first developed in Holland. Where, for instance, an early or second-early crop is marketed direct from the field, the broke may be preserved for future use by ensiling it along with aftermath grass and clover. For this purpose there is no need to have a concrete or other form of container, nor even to dig a pit or trench. A level piece of ground is chosen and a foundation for the silage stack is made with a layer of green grass, which should be about a foot deep. Upon this, alternate layers of potatoes and grass are built up. The Dutch recommend a proportion of about three tons of grass to one of potatoes, and, if plenty of grass is available and the silage is wanted for cattle food, this proportion may be recommended. The proportion of grass can, however, be reduced to something less than two-thirds, when the resulting silage will be more suitable for pig-feeding. The potatoes should be reasonably clean, but otherwise need no preparation, and no molasses or other addition is required.

A surplus of old-crop potatoes may be dealt with in the same way as soon as a cut of grass is available—say in early June. In this case, however, it is necessary to knock off the bulk of the sprouts, which might otherwise cause scouring or even poisoning.

In this process, the heat of the fermentation cooks the potatoes. The product is sweet-smelling and palatable, and can be used in quite large amounts for dairy and fattening cattle and for pigs. As always in the making of silage, tight packing is important, and this may be most easily secured by drawing the carts over the heap in the process of building it. As soon as the carting is finished the sloping ends should be cut away and the material thrown on top. The day after the heap is finished a good layer of earth, ten or twelve inches thick, should be spread on top and, after the heap has settled, the sides should be earthed up.

With maincrops, if the proportion of disease is not unduly high and if the crop is likely to be marketed in autumn or early winter, the utilisation of broke presents no difficulty. On the other hand, if the crop is to be held until late winter or spring, most of the diseased tubers will be rotten before the time of marketing, and if there is much disease there will be a heavy loss of what might have been useful food. This loss cannot be prevented without a good deal of expense, and a good deal of extra labour at what is usually a busy season on the potato-growing farm. But things that would be unprofitable in ordinary times may be worth consideration under war conditions, and therefore a scheme for the saving of maincrop broke is worth describing. That used in Germany is as follows.

The crop is dressed as it is lifted, and only the sound seed and ware are pitted. As soon as lifting is completed the broke, which has been thrown aside and roughly covered, is steamed or boiled and ensiled.

A pit is used in this case. It may be about six feet wide, about three feet deep, and is made as long as may be necessary. The sides should have some slope, and it is an advantage to line the sides and bottom with straw. The potatoes are boiled or steamed (the latter being better) for about three-quarters of an hour, are put into the pit as hot as possible, and are well trodden down. The top is drawn to a ridge and is beaten with the spade to get a firm surface. This is then covered with a layer of straw and finally with a heavy and well-rammed layer of soil. Potato silage made in this way is a good food for cattle and for any pigs above four months old. Where the necessary steaming plant is not available, bins or troughs may be used to hold the potatoes and a traction-engine hired to supply steam.

Crops for Stock-Feeding.

It is too early to draw up any detailed scheme of cropping for next season, for it is impossible yet to predict the conditions under which the farmer will have to work in 1941—the labour situation, the position with regard to fertilisers, the number of tractors that will be available, and so on. Moreover, beyond a further increase in the arable acreage, it is impossible to suggest any major alterations in cropping that would be likely to produce substantially larger amounts of the kinds of stock food that are required. In Scotland turnips and swedes, oats and hay must remain the chief crops for winter stock food. The following few notes deal with relatively minor points.

Some increase in the acreage of beans, on all the stronger soils, will be a wise precaution. In many cases a higher yield of food per acre will be got from a mixture of oats and beans (mashlum) than from the two crops grown separately.

Marrow-stem kale has been given a trial in most parts of Scotland, and most farmers already know whether or not it is a more profitable crop, for autumn feeding, than turnips. The general opinion is that it is better than turnips for dairy cows, that it will keep more sheep, acre for acre, than turnips, but that it is less suitable for the later stages of fattening. The only special merits of kale under war-time conditions are that it does well on old turf and that, if it is well dosed with nitrogen, it is a far better smotherer of weeds than a crop of turnips. Hence when grown on rather dirty land it requires less labour than turnips.

On farms where calf-rearing is carried on there is a case for growing a small acreage of linseed, though it must be admitted that the ordinary yield is not heavy—about 10 cwt. of seed per acre. Moreover, the straw is quite useless for feeding. Plate (Argentine) linseed is the most suitable for seed production of the common commercial types, but steps have been taken to build up stocks of the best pure varieties for next season.

It is, of course, desirable that a due balance should be maintained as between grain and green crops in time of war, for nothing will do more to solve the winter stock-feeding problem, and to keep the land in condition, than a large acreage of turnips, swedes, &c. But labour conditions may well set a limit to the acreage of roots that can be grown and kept clean, and a second or third white straw crop may, in many cases, have to be taken where a cleaning crop would have been the normal thing. Where grain must be sown on dirty land it will generally be the lesser evil to choose a late-sown crop of barley. If an early-ripening variety of barley be used, sowing may be delayed till the end of May or even the beginning of June; some cleaning operations should be possible during May, and the crop, growing rapidly under the warm conditions, will usually keep weeds under some measure of control. This late sowing of early-ripening barley was the only means used by our ancestors to control weeds on their 'infield' land, which carried a white crop every year. Naturally, a malting sample of grain is hardly to be expected, but with pigs at current prices it should be profitable to grow barley for feeding purposes. According to such experiments as have been carried out, the most suitable varieties for the purpose are Svalof Victory and the Danish sorts, Kenia and Maja. The two latter, on account of their short and stiff straw, are to be preferred for land that is in good condition.

PIG-FEEDING.

It is fully realised that the problem of war-time stock-feeding is met in its most difficult form by pig and poultry keepers. Normal rations for both pigs and poultry contain from seventy to ninety per cent of cereals and cereal offals—maize, barley, wheat, bran, middlings, &c.—and, as was shown at the beginning of this article, we have been accustomed to rely upon imports for about two-thirds of our requirements of this group of foods. Moreover, most of them are possible human foods, and their conversion into eggs and table poultry, or into pork and bacon, is, in terms of food values, a very wasteful process. To take bacon production as an example, about seven hundredweight of meal is required to produce a 200-lb. pig, which yields about one hundredweight of finished bacon; hence if shipping space is, or becomes, a major difficulty, it must be good policy to import the finished product rather than the raw materials for its production. Further, if actual scarcity should threaten, as it did in 1917, a 4-lb. loaf, even of indifferent bread, would be of more value than half a pound of bacon or half a dozen eggs. It seems, therefore, that, in so far as it may become necessary to reduce our total head of livestock, the reduction will have to fall first and most severely upon our pig herds and poultry flocks.

Where there are special reasons for maintaining the number of breeding stock—*e.g.*, in the case of pedigree pig herds—there is an argument for reversion to the old practice of once-a-year breeding. Spring-born litters are usually the most profitable in any case, and spring-born pigs can be finished in summer when supplies of feeding-stuffs may be relatively abundant. In winter the herd would consist entirely of breeding animals.

The possibility of finding reasonably good substitutes for the foods ordinarily used in pig-feeding is, at the best, not very great. Where an intensive system of pig-keeping is carried on—*i.e.*, where large numbers are maintained on small areas of land—the opportunity for substitution is often practically non-existent, and the only wise course for the breeder is to bring down the number of his pigs to a figure in keeping with the supplies of ordinary feeding-stuffs that he may expect to secure. It is, indeed, known that it is not economical to feed pigs *ad lib.*—that a system of strict rationing is more profitable than one of feeding according to appetite. The ration scale used by the writer starts at 2 lb. of meal for the weanling and increases by weekly increments of roughly a quarter of a pound until the daily allowance reaches 6 lb., at which level it remains until the pig reaches bacon weight (200 lb. live). Reduction below some such level leads to unsatisfactory results. It is perhaps necessary to stress this well-established fact, because there is an undoubted temptation, under war conditions, to keep larger numbers of stock than can be adequately fed.

Where the pig herd is a minor department of a general farm, the possibilities of finding substitute foods are much greater. On the one hand there may be substantial amounts of such by-products as light corn, broke potatoes, sugar-beet tops, or market garden waste ; on the other, some saving of concentrates may be achieved by the proper use of pastures, by the production of catch-crops such as rape, by using pigs to glean stubbles, and by the use of foods such as swedes that are commonly reserved for other classes of stock.

The various substitute foods may be grouped in three categories. Firstly are those that can be used to provide a substantial part of the ration without any slowing-down of the rate of progress of the animal, or any loss of efficiency. These include light and small grain, steamed or ensiled potatoes, and the better sort of household swill ; the latter, of course, should be cooked or steamed. These foods are, indeed, often used under normal circumstances, and the only point about their use in war is that more care and trouble should be taken to avoid waste. The second class—foods that are satisfactory if used in moderate amounts—include sugar-beet tops, carrots, swedes, and mangolds. The third includes such relatively fibrous materials as kale, cabbage, waste greenstuff from market gardens, cut green clover and grass, and grass silage. Under ordinary circumstances these are put to better use by other classes of stock, and they cannot constitute any large part of the pig's ration (except in the case of the in-pig sow) without slowing down, very considerably, the rate of progress. A little food of this sort is, of course, a valuable supplement to a pig's ordinary meal ration, since it supplies vitamins. But a useful supplement may be a poor substitute.

Apart from the nature of the substitute that is available, the extent to which it can be used with success varies with the age of the pig and the rate of progress aimed at. The scope for saving concentrates is greatest in the case of the in-pig sow ; it is less, but still considerable, in the case of the breeding gilt from the age of three or four months upwards. A smaller economy, but one that is worth making, is possible in the case of a pork or bacon animal from about the same age. With the nursing sow, or with the young animal up till three months of age, attempted savings are likely to be unprofitable; the lack of a full ration of concentrated and nutritious food will result in the production of stunted and misthriven stores.

In the case of in-pig sows and strong gilts a large saving of ordinary food can be made during summer by running the animals on good pasture, on rape, or after harvest on stubbles—especially if the grain crop has been sown out with grass and clover. It is, of course, necessary that the pigs should have nose-rings. If there is a fencing problem an excellent solution is available in the electric fence. A single strand of light-gauge plain wire, hung on insulators at about fifteen inches from the ground on light pegs, has given completely satisfactory results on the farm with which the writer is concerned. The capital cost for wire, pegs, and batteries was about £8, and the running costs are almost negligible.

The amount of concentrate that will be necessary to keep grazing sows in good breeding condition necessarily varies with the quality of the grass or other food on which they are running. Where pasture is short and leafy, and where the proportion of clover is high, one or two pounds of meal per head per day will suffice. The same amount will do for pigs on rape, and less may suffice on stubble so long as there are ears of grain or shed grains to be found. On poorer keep three or even four pounds may be necessary. On clovery pasture whole maize alone (which should be soaked for two days before feeding) serves very well. On stubble, unless there is a good bite of young clover, a mixture of whole maize and whole beans, in the proportion of about two to one, will be better. On arable crops such as rape it is better, unless troughs are used and full trough-room is provided, to buy the necessary concentrates in cube or nut form. Except in very wet weather cubes can be picked up clean from the ground. On crops such as rape it is best to give the pigs a limited amount of ground, and to move them rather often. On pasture the pigs do best if they have a wide range among other stock. A small grass paddock grazed by pigs exclusively is of little value, because the grass soon becomes rank and patchy. Pigs alone are bad grazers.

In winter this group of stock can be kept in condition with two or three pounds of meal if they have a full ration of cut swedes or mangolds. With more fibrous material such as kale or other greenstuff, or grass silage, the allowance of meal must be rather more generous.

Pigs intended for slaughter may also with some advantage be run on pasture, assuming always that the herbage is kept young and leafy by grazing with other stock, and that the sward is composed of good grasses with a fair proportion of clover. The average results of five different trials in the

United States showed that pigs running on good clover or lucerne pasture consumed 3·94 lb. of concentrated food per pound of live-weight increase, as compared with a figure of 4·50 lb. for the control lots kept without access to pasture. The corresponding figures for trials with rape were 3·81 against 4·40. Thus in both cases about one-eighth of the concentrate was saved. In both cases, also, the daily live-weight gains were greater for the pasture-fed groups.

The simplest scheme for using substitute foods under indoor conditions is what is known as the Lehmann System or some modification of this.

This system, as originally worked out in Germany, was intended to apply to the utilisation of relatively large quantities of potatoes in pork or bacon production. The pigs are kept until they are about three months old on a full allowance of an ordinary, well-balanced meal—*i.e.*, one containing about 14 per cent of protein equivalent and the necessary amounts of minerals. The daily allowance of meal reaches about 2½ lb. per head at the age indicated, and is not afterwards increased. From this point onwards the rising food requirement is met by feeding increasing quantities of potatoes, which are fed almost up to appetite until the daily allowance reaches about 14 lb.; this amount is equivalent to 3½ lb. of barley meal. The pig can generally be carried to bacon weight (200 lb.) on this amount. In the later stages the cooked potatoes may be largely replaced by potato silage.

The system has the merit of simplicity, and the change in the protein and mineral balance of the ration, as the proportion of potatoes is increased, is in keeping with the pig's changing requirements. The scheme has given very satisfactory results, whether in terms of daily live-weight increase or in the food cost of the increase—always assuming that potatoes can be charged at something less than one-fourth of the cost per ton of barley or maize meal.

Further experiments have shown that full progress can be maintained by partly replacing the potatoes with other fairly digestible foods; for instance, in one German experiment a mixture of two parts of cooked potatoes and one part of chopped swedes (raw) gave practically as good results as the potatoes alone.

It seems that where substitutes other than potatoes or good swill are to be used, the scheme must be modified by making the meal allowance more generous. Where swedes, mangolds, or sugar-beet tops are used to the exclusion of potatoes, the meal allowance should be raised to about 3½ lb. per day at the age of five months. With kale or silage a further increase, to perhaps 4½ lb., at the age of six months, will probably be necessary to maintain reasonably good progress. With foods other than potatoes and swill, the daily gains will be somewhat reduced, but the finished pig will still be produced with a substantial saving of concentrated food.

A comparatively minor difficulty in pig-feeding may be a shortage of supplies of the ordinary sources of animal protein—white fish meal and meat or meat-and-bone meal. Up till the outbreak of war this difficulty seems to have been completely met in Germany. Firstly it was found that the old proportion of fish or meat meal—about 10 per cent of the mixture—was unnecessarily high; with 5 per cent of either of these, perfectly satisfactory results were obtained when the protein balance was made good by using sources of vegetable protein such as soya-bean meal, ordinary bean meal, or earthnut cake. Moreover, additional supplies of animal protein were obtained in the form of extracted herring meal (*i.e.*, meal from which most of the oil is removed in the process of manufacture) and carcase meal. The latter is made at knackeries and slaughter houses from material that was formerly turned into manure. There is no more than a sentimental objection to the use of carcase meal in pig-feeding, as the material is completely sterilised in the process of drying.

SHEEP-FEEDING.

It is one of the aims of our national war agricultural policy to maintain, or if possible to increase, our home output of mutton and lamb. The arguments for the official view are that, even in ordinary times, sheep consume smaller amounts of imported feeding-stuffs, in proportion to the quantity of meat that they produce, than any other class of livestock; that it is comparatively easy to find substitutes for part of the cake and grain that sheep ordinarily consume; that sheep can make excellent use of some of the coarser feeding-stuffs, such as cotton cake and distillery grains, which are unsuitable for many other purposes; and that in winter, when the demands on feeding-stuffs are at their peak, the breeding flock can pick up a large part of its living from pasture.

A larger output of mutton and lamb does not necessarily imply an increased number of breeding ewes. On certain farms it may, indeed, be possible to enlarge the ewe flock without any particular harm, but on many others numbers are already as large as they can well be; sometimes the state of affairs that is implied by saying that land is 'sheep sick' is largely due to stomach-worm infestation, which can be kept under some degree of control by the use of drenches and pills; but there is no way of preventing the damage that is done to pasture by punishing it with excessive numbers of ewes in winter and early spring. Where numbers are already about a maximum, the way to increase output must be to keep the lambs to a greater age and to market them at heavier weights. In recent times there has been a steady tendency towards the earlier marketing of fat lambs and a steadily growing preference, on the part of the butcher, for light-weight hoggets. With controlled prices the incentive to produce young fat lambs and small hoggs has disappeared, and heavier and older sheep will often be cheaper to produce, weight for weight.

It seems best to think separately about the three main feeding problems—those of the ewe in late winter and spring, of the lamb in summer and autumn, and of the winter-fattening hogg.

Spring grass is the best of all foods for the nursing ewe, and the earlier that this can be provided the shorter will be the period of box-feeding. Attempts to force an early bite may, of course, be foiled by weather conditions, but if careful preparations are made it may be expected that, in perhaps two years out of three, spring growth can be produced about a fortnight before the normal time.

It is well known that a supply of available nitrogen is one of the things that are required to start grass into active growth, and hence one of the essential steps in the production of early bite is to give, in March, a dressing of about a hundredweight per acre of a quick-acting fertiliser such as nitro-chalk. But this is by no means the whole story. This nitrogen is like a whip to a horse, and unless the horse is both strong and willing the response will be small. The willing horses among our pasture plants are the ryegrasses and cocksfoot, and the only fields that are worth treatment are those containing a good proportion of these. Obviously, too, a light and well-drained soil will warm up quickly in spring, whereas clay land is necessarily late. The fields for the purpose must also be selected with reference to elevation and exposure.

The third necessary step is to adopt a system of grazing in the autumn and winter that will bring the grasses into strong condition—*i.e.*, a system that will allow the plants to store up a large reserve of food in their roots and leaf-bases. To this end the field, after being grazed fairly bare in July, should be left unstocked during August, September, and October, or until active growth comes to an end for the season. The bulk of the roughage should now be grazed off, and the field should be completely rested again from January onwards. Even light stocking in the late winter weakens and exhausts the ryegrass so that it cannot answer quickly to the fertiliser.

Another obvious way of reducing the ewes' demands for feeding-stuffs is to delay the lambing; this may be sound policy in certain cases—*e.g.*, draft ewes which would normally be put to the ram in September may be held back till mid-

October to lamb in March. But it will generally be unwise to adopt the corresponding step with, say, a regular breeding flock of half-breds. The point is that the first heat of the ewe produces, in a big proportion of cases, a double ovulation (two eggs), whereas the later heats often give only a single egg. If the early heats are missed the proportion of twins will almost certainly be less.

Until grass comes the ewes must be kept in milk by the use of other foods, and it is well known that an increased ration of turnips or swedes is no satisfactory substitute for the ordinary allowance of dry food. It is, in fact, a common observation that a superabundant root crop often produces crops of big but ‘ soft ’ lambs, and causes trouble from shortage of milk in the ewes. The explanation seems to be that roots are, by themselves, an ill-balanced food for the purpose of nourishing the lamb, either before or after birth. If we must make shift with more roots and less dry food, something may perhaps be done to adjust the balance by changing the composition of the latter—by putting in more of the high-protein foods such as cotton and earthnut cake, and reducing the proportion of the starchy ingredients such as maize and oats.

On some farms known to the writer very good results are being got from grass silage as a food for ewes at this season. The grass is mown some three weeks before it would have been ready for hay, and is ensiled, with molasses, either in trenches (like wide potato pits) or in some cheap form of silo. This subject was discussed by Crichton in the ‘ Transactions ’ for 1935, and is fully dealt with by Dr S. J. Watson in his book ‘ Silage and Crop Preservation ’ (Macmillan, 1938). Naturally, if only a limited amount of silage is provided, it should be kept until close on lambing time. Any surplus can be held over till the following year.

To turn to the second problem, the demand for lamb food falls at a season of the year when the needs of other classes of livestock are at their lowest, and it might be argued that the need for economy will not be so urgent. But from the broad point of view the summer should undoubtedly be used to build up a reserve supply of feeding-stuffs as an insurance against a scarcity in winter.

On farms that are not very heavily stocked with sheep, the lack of lamb food will mean only that the lambs will fatten more slowly and that bigger numbers will have to be finished after weaning. Where numbers of sheep are large, and have been large for some time, there is the difficulty that lambs will not only fail to get fat in the absence of box-feeding, but may fail to make thriving stores. In many cases the explanation of this fact is to be found in the level of worm infestation—the lamb that is eating half a pound of concentrate is somehow able to fight down the parasites, while the other lamb, dependent on milk and grass, fails to do so. Worm treatment is, in this sense, some sort of substitute for box-feeding, and should be kept in mind. On many farms in the south of England, where stomach worm is extremely prevalent, routine drenching or 'pilling' of both ewes and lambs has become the normal thing. The commonest medicine is the mixture of copper sulphate and nicotine sulphate, which can be obtained, in convenient form, from veterinary chemists. In other cases, where the type of worm is different, arsenical pills give better results. Careful management of the lambs, with frequent changes to clean ground, is, of course, quite as important, as a measure of worm control, as the use of drugs. Where grass silage has been made, the supply of clean aftermath, several weeks before the hay aftermaths are ready, has been found a valuable asset.

In fattening out lambs in late summer and autumn it is important to make full use of aftermaths and stubbles, and it may well be worth while to grow areas of rape and kale. Both these last crops do very well on ploughed up grass-land, and may well be more profitable than oats, especially where grub or wireworm attack is to be feared.

It is a rather unusual thing to set up the south-of-England farmer as an example to be copied by his opposite number in Scotland, but the writer has found reason to admire the south-country practice in making use of autumn forage crops for sheep. It is a common thing in Scotland to see a mob of lambs scattered throughout a field of aftermath or rape, and it is usually obvious that a considerable quantity of useful food is being wasted. Moreover, the value of the keep gets less and less as time goes on, and the sheep therefore fail to make full progress. The ordinary south-country practice, while it has the disadvantage that it entails a good deal of labour, makes better use of the keep. A heavy crop of aftermath or rape for feeding lambs is best used by a system of double-folding. The lambs are drawn into two lots—the forward and the backward—and these move over the ground in succession. A piece of the field, large enough to last the forward group for two days, is netted off. When these have taken the best of the keep they are given a fresh fold, and the second group follows to clean up. It is important that the keep should be cleaned up in four or five days in all, otherwise the worm eggs left by the first lot of lambs will infect the second.

On the winter fattening of hoggs, it seems that one can suggest nothing better than a return to the type of ration that was used in the days before large supplies of cheap feeding-stuffs were available. The following table gives the results obtained in experiments from rations which include only the kinds and quantities of concentrates that are likely to be available :—

Date	Length of Time	Breed of Sheep	Store Weight	Fat Weight	Daily Ration	Live-weight Gain
	Weeks		lb.	lb.	lb.	lb. per week.
1899	10	Greyface	96	115	Swedes, 15·3; Dried Grains, 1·02	1·93
1899	10	do.	91	108	Swedes, 14·7; Oats, 0·23; Dried Grains, 0·23; Linseed Cake, 0·23	1·71
1900	15	Greyface	80	102	Turnips, 14·7; Hay, 0·68	1·47
1900	15	do.	80	116	Turnips, 14; Hay, 0·47; Undecorticated Cotton Cake, 0·73	2·42
1900	15	do.	80	119	Turnips, 12·7; Hay, 0·40; Dried Brewers' Grains, 0·73	2·60
1903	13	Half-bred	101	128	Swedes, 17·3; Hay, 0·47	2·06
1903	13	do.	101	137	Swedes, 16·3; Hay, 0·38; Bombay Cotton Cake, 0·35; Dried Brewers' Grains, 0·35	2·71
1906	12	Half-bred	91	116	Turnips, 14·2; Hay, 0·28; Bombay Cotton Cake, 0·83	2·07
1906	12	do.	93	121	Turnips, 13·7; Hay, 0·37; Linseed Cake, 0·41; Bombay Cotton Cake, 0·41	2·36

It is not, of course, to be denied that foods of high fattening value, such as flaked maize and linseed cake, will give better results than poorer materials such as poor-quality oats, dried grains, and cotton cake. The richer foods are, indeed, specially useful at the finishing stage, and if they are to be had only in limited amounts they should be kept until the last part of the feeding period. But for the greater part of the time the feeder can dispense with them.

THE CONTROL OF PESTS OF FARM AND GARDEN CROPS.

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IN the intensive cultivation of crops there are a number of factors which tend to suppress the growth of plants. One of the chief limiting factors is the group of organisms classified as plant parasites or pests, which in the course of their existence cause direct injury to the plant and prejudice in many different ways its successful development. When we grow crops, and thus increase the number of plants of one kind, we produce conditions which tend to favour the multiplication of pests of the crop we are growing, and the pests in turn will reduce the productivity of the host until a natural balance is reached. The aim of crop husbandry is to modify this balance by increasing the growth of the plant and diminishing the incidence of pests. It is because of the tendency of pests to increase with an increase in the number of host plants that there arises the need for plant protection. In war-time it is necessary to increase the production of food crops to the utmost; it is at such a time that it is specially important to study the means of keeping in check the pests which destroy our crops.

All pests depend upon some means of carriage from one plant to another. If, for example, an oat plant only grew at isolated intervals among other plants, the chance of the spores of smut being blown by the wind from one plant to another would be small. When we grow oats as a field crop, however, we greatly increase the chances that the spores produced on an infested plant will find another host. Many insects also depend for their distribution upon the proximity of suitable plants to an infested host.

CONTROL MEASURES.

There are three main methods, which are used either singly or in combination, by which plant pests are controlled. These are:—

(1) By breeding plants resistant to the pest in question.
(2) By proper nutrition of the plant.
(3) By the application of substances injurious to the pests, which are known as insecticides and fungicides.

(1) *Plant-breeding.*—This method has been known since 1815, when Thomas Andrew Knight advocated the planting of wheat which was resistant to rust. More recently potatoes immune to scab and turnips resistant to finger-and-toe have been introduced. This method of controlling disease is becoming more and more important, and is perhaps the most economic of all methods of pest control. Up to the present it has been applied chiefly to the control of fungoid diseases.

(2) *Proper Nutrition.*—It has been known from the time of Liebig (*circa* 1840) that badly nourished plants are more susceptible to attack than healthy robust plants. Where certain forms of disease are prevalent it cannot be too strongly emphasised that greater attention should be paid to properly balanced manuring. Many failures of field crops can be traced to malnutrition. A heavy dressing of a nitrogenous manure, for example, makes potatoes more susceptible to blight, and wheat to mildew and yellow rust, especially when the nitrogen is not used in proper balance with phosphates and potash. Similar results have been obtained with a great variety of plants, and the generally accepted view is that heavy nitrogenous manuring leads to an increased liability to disease, especially when unbalanced by other manurial substances. The lack of available phosphate and potash also induces a decline in the plant's resistance to disease. The plant's vitality is also lowered by unfavourable soil conditions —for instance, too sour or too alkaline conditions, bad drainage and bad aeration of the soil, and it is rendered an easier prey to pests. These conditions may be detected by an examination of the soil conditions, and, if necessary, an analysis. The cure consists of the application of a properly balanced manure, with drainage and liming where necessary, and efficient cultivation. In recent times we have learned that certain plant diseases may be promoted by lack of certain of the minor elements of the soil, such as Boron or Manganese, and can be prevented or cured by small applications of suitable compounds of these elements.

(3) *Application of Fungicides and Insecticides.*—The application of a noxious substance to the plant surface to kill or repel insects has been tried since quite early in the history of agriculture and horticulture. The first insecticides used are said to have been decoctions of bitter or strong-smelling herbs, which were applied to the plants in the hope that the offending insect would be either deterred or driven away by the objectionable taste or offensive odour. It was noted by early explorers that the natives of the Amazon basin and the Malay Peninsula made use of certain plant juices against insects, and some of these juices have been shown by modern science to be most effective means of dealing with certain insect pests.

One of the first substances used in modern times in Europe was a mixture of sulphur with soap-suds, which was probably introduced about 1820. Little progress was made in the chemical control of pests until about 1870, when Paris Green, an arsenic compound, was used in America against the Colorado Potato Beetle. Since 1880 great advances have been made, and to-day we have at our disposal a large number of substances for combating insect and fungoid pests. It is not possible to deal in this paper with all the substances which have been tried as insecticides and fungicides; only the more important ones are described, and special attention is paid to those which have been introduced during the last twenty years, which has been a very active period in investigations upon this subject.

The pest control industry is now a very important one in this and other countries. The amount of damage done by the various plant pests is estimated to be at least £20,000,000 a year in this country alone. In the United States, where there is a much greater area and a more favourable climate for pests, the value of the insecticide trade alone was estimated to amount to over £30,000,000 in 1936, and we are indebted to that great country for much modern investigation into the use and value of various chemical substances for controlling crop pests.

CROP PESTS.

The successful treatment for all parasites must be based upon the life-history of the pest, and the attack concentrated upon the weakest part of its defences. Where the pest is open to attack by the direct application of a chemical preparation, then it may be treated by spraying or dusting. Sometimes the most easily attacked stage is the egg, and for this purpose a special group of insecticides is used, called ovicides. For the destruction of insect pests in other stages there are three important groups of insecticides—namely, contact insecticides, stomach insecticides, and vapours or gases. The contact insecticides are generally used for insects which damage the plant by piercing the cell walls and sucking the cell sap. They either paralyse the insect by action on its nervous system or close its spiracles and suffocate it. The stomach insecticides are used for insects which eat parts of the plant to which they can be applied. This type of insecticide consists of poisonous chemicals, which poison the insect when eaten by it. The third class consists of poisonous vapours and gases which are breathed in by the pest and thus poison it.

For treating diseases caused by either fungi or bacteria we use a group of chemical preparations known as fungicides. These are generally applied by spraying or dusting.

METHODS OF APPLYING INSECTICIDES AND FUNGICIDES.

Pest control chemicals may be applied by three methods, as follows :—

(1) Spraying, where the material is applied as a solution or as a suspension or an emulsion in water.
(2) Dusting, where the material is applied as a finely divided powder.
(3) Fumigation, when the chemical is applied as a gas or vapour.

Of these three methods the one that finds the widest application is spraying. In spraying, great care must be taken to select materials of a quality and kind suitable for the purpose in view. In this country there are not at present any legal standards for poisons to be used as sprays. An arsenical spray of unsuitable quality, for instance, may injure the foliage of the plant as much as it does the pest. Then the application must be made at the proper time. The essential requirements of a spray are (1) the material must not damage the plant, (2) the spray must cover the whole surface upon which it is to act. A contact spray must make contact with the pest to be killed, while a protective spray must cover the whole of the surface it is to protect. Where the poison is to act as a stomach insecticide it must remain on the plant surface sufficiently long to poison the pest. If it is washed off by rain, or if chemical decomposition takes place, then its efficiency is reduced. Care must be exercised, therefore, to see that the materials made are suitable for the purpose in view. There have been many cases where costly spray materials have been wasted and where the protection of the crop has been inefficient through neglect of this precaution.

Many water solutions fail to cover the surface of a plant because the solution does not wet it, and when applied merely runs off again more or less completely. Other solutions, although they wet the surface, collect in large droplets upon the leaf surface, and, on drying, we get an uneven deposit of the poison which may harm the leaf at those parts where it is concentrated. Many of the early sprays suffered from these defects, and the discovery of means of improving the wetting power of sprays has been among the most valuable of recent improvements in the means of making sprays effective. To overcome wetting difficulties, substances known as wetters and spreaders are incorporated in the sprays. A wetter makes the spray wet the foliage, and a spreader makes it spread in a uniform film over the leaf. Many substances act as both wetters and spreaders. Where protection is desired to last for some time substances which make the spray adhere to the leaf are mixed in the spray, and these substances are known as stickers.

Wetters.—The first wetter and spreader used was soap, by Robertson in 1821, who used it for a sulphur spray. Soft soap has been widely used, but it has the great disadvantage that it is not suitable for use with hard water. Also it cannot be used in sprays which contain lime. Where lime is present casein or skim milk has been found to act as a good wetter. Recently a substance named sodium hexa-meta-phosphate has become available in commercial quantities, and this material at the rate of ¼ lb. to 100 gallons of water allows ordinary soaps to be used with ordinary hard waters. During the last few years a large number of organic soaps have been found to possess high wetting powers. Most of these substances are proprietary articles sold by the makers under trade names such, for example, as Agral I. and Agral N., and Aresket and Areskap. The use of such substances is well worth while, for their wetting power may be as much as ten times greater than that of ordinary soap.

Although the incorporation of a little wetter and spreader may increase the efficiency of a spray, one has to be careful not to add too much. If this is done it may increase the spreading properties so much that it will cause most of the spray to run off. For greatest efficiency a correct balance must be made to allow the surface to be properly wet, and at the same time a sufficient amount of spray to be retained upon the surface of the plant.

When the poison to be applied is in the form of a solid which is not soluble in water, then a suspension must be made. Sometimes a substance, such as sulphur, will not mix readily with water. In such a case mixing may easily be accomplished by including a little of a suitable wetter with the solid. For example, when only 1½ ounces of butyl-phenyl-phenol-sodium-sulphonate—a proprietary article known as Aresket—is mixed with 100 lb. of precipitated sulphur, the sulphur mixes with water at once.

If the spray contains an oil which does not mix with water, then it must be emulsified. It was difficult at one time to make a good emulsion, but now there are a number of substances upon the market which when dissolved in the oil emulsify it immediately on mixing with water. A great deal of attention has been paid to emulsions recently, and some of the most efficient pest control substances are what are termed quick-breaking emulsions. A quick-breaking emulsion is one which breaks up on being sprayed upon the plant and deposits a film of oil containing the poison on the surface. This film of oil is not readily washed off by rain, and so prolonged protection is obtained.

Mixed Sprays.—Sometimes it is advisable to mix two or more different substances intended to attack different pests in one spraying solution in order to save labour. This cannot be done indiscriminately, because some substances when mixed together in one solution interact and destroy the active principles. The mixing should be done by following a definite procedure. Compatibility tables showing what substances may be mixed are given at the end of this paper.

Spraying Machines.—Spraying solutions should be applied by a good type of sprayer. Cheap equipment almost invariably proves the most uneconomic. The spraying equipment should be made of non-corrosive metal. Rubber tubing, especially if oil emulsions are to be used, should be the petrol-resisting kind, which is now made by many rubber manufacturers. The selection of the correct type of spraying jet is very important. No definite rules can be laid down, because the type of jet depends upon the make of machine and conditions of spraying. Jets should be, where possible, of the self-clearing type. The actual spray should be fine so that the droplets do not fall readily to the ground before hitting the plant. On the other hand, it should not be so fine that it is easily floated away when there is almost no wind. When possible, spraying should be carried out when there is little or no wind.

Dusting.—Dusting is of increasing importance, but much more research work is required before it becomes so well established as spraying. It has decided advantages over spraying in that no water is required, which lessens labour by making transport of materials easier and doing away with the preparation of solutions. However, it is doubtful if it is as efficient as spraying. The powder used must be very fine and light. This allows it to drift better than a spray, but dusting can be used only where there is little or no wind. The best time to apply dusts to secure adhesion is when the foliage is wet with dew or rain.

Winter or Dormant Sprays.

Winter sprays are used to kill the eggs and hibernating stages of insects, and to destroy lichens, mosses, &c., which afford them protection. These sprays being applied during the dormant period may be made of substances which are not of a high degree of purity and may be used at comparatively high concentrations without injuring the plant. There are three types of sprays used as winter washes—namely, alkaline sprays, tar oil sprays, and mineral oil sprays.

The alkaline washes consist of preparations of caustic lime and caustic soda, and have long been used. Probably the earliest practice of this kind was the lime-washing of the trunks and main branches of fruit trees. Then came the use of dilute solutions of caustic soda. These practices are well known and are dealt with in many text-books, so we do not propose to deal further with them here.

The tar oils have been used for some time, and in the early years of their use it was hoped to obtain through them complete control of certain insect pests. The continued use of tar oil washes, however, has not fulfilled this expectation, as it was found that they do not destroy effectively certain important pests. It is found, for instance, that aphis and apple-sucker are controlled by tar oil distillate, while sawfly and red spider are not. Since the advent of tar oil sprays red spider infestation has increased in some places, possibly due to the destruction of useful insects which preyed upon their eggs. Subsequent work showed that mineral oil preparations are fairly efficient in controlling both the sawfly and the red spider, although they do not kill the eggs of aphis and apple-sucker. Combined sprays of tar oil and mineral oil have given good control of all these pests, but some operators prefer to use a tar oil spray in mid-winter, followed by a mineral oil spray in the late winter.

Tar Oil Washes.—It is stated by Dr Hubert Martin[1] that the tar oil for a high-grade winter wash should conform to the following specifications: contain 88 per cent of neutral oil and not more than 6 per cent phenols; the boiling range should be such that 90 per cent by volume should boil above 270° C., 50 per cent above 325° C., and 20 per cent above 365° C.; and the specific gravity should be 1·09 to 1·11 at 60° F.

The tar oil may be made miscible with water by dissolving 25 parts of sodium resinate soap in 75 parts of the oil. When mixed with water this mixture gives a milky-white emulsion.

Mineral Oil Washes.—The mineral oil for a winter wash should have, according to Dr Martin,[2] the following specifications: a specific gravity of 0·86 to 0·92 at 60° F., a viscosity of not less than 125 secs. and not greater than 500 secs., Redwood, at 70° F., and an unsulphonated residue of not less than 60 per cent by volume. It should be neutral and free from bases, and at least 90 per cent by volume should distil above 315° C., 50 per cent above 350° C., and 20 per cent above 380° C. The usual grade of mineral oil used in winter washes is what is known as a medium spindle oil.

Mineral oils may be rendered miscible with water as follows: mix together 2 lb. of soft soap and 1 quart of cresylic acid, and stir, warming if necessary, until the soap is dissolved. Add this mixture to about 1 gallon of the mineral oil, stir until it is dissolved, and then mix with other 4 gallons of the mineral oil. This forms a miscible oil which emulsifies on mixing with water.

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[1] Ann. of Appd. Biology. Vol. XXII., pp. 381-82., 1935. [2] *Ibid.*, p. 355.

The strength at which a winter wash can be used most effectively varies for different species of insects and for different kinds of plants. Generally, a 5 per cent emulsion of either the tar oil or the mineral oil preparation given above is used, except for plum trees and small fruit bushes, when a concentration of 2 to 3 per cent is recommended.

Time of application.—Both washes should be applied during the winter months when the plants are dormant, generally from the end of November till the time shortly before the buds begin to open. In Scotland it is, generally speaking, necessary to apply these sprays before the end of February. Spraying should only be done on calm days when there is no likelihood of frost within about nine hours after treatment.

Tar Oil-Mineral Oil Combined Wash.—A combined tar oil-mineral oil wash is sometimes used to save labour costs, and a wash of this kind has been tried for several years at Aberdeen and found quite effective. This wash is easily prepared by mixing together equal parts of tar oil distillate and mineral oil. To three parts of this mixture is added one part of the emulsifying oil, Whitcol J. Whitcol J. is a proprietary emulsifying oil, and we have found in our trials that it is a most satisfactory substance for this purpose.

This mixture should only be used during the dormant period as stated above. It is generally used at a concentration of 10 per cent—*i.e.*, one gallon of the mixture to ten gallons of water, except for plum trees and small fruits, when about half this strength is used.

Precautions.—All tar oils burn the skin, so that the eyes, face, and hands of the operator should be protected. The eyes should be covered with goggles, and the face and hands covered with grease. If the skin is burnt the affected area should be washed with one part of vinegar and four parts of water, and then treated with lanoline.

Summer Sprays.—Summer sprays, being applied when the plants are in foliage, must be made of carefully selected materials to obviate the risk of damage to the plant. There are three important groups of summer sprays—namely, contact insecticides, stomach insecticides, and fungicides. Some materials, such as lime sulphur, act both as contact insecticides and as fungicides.

CONTACT INSECTICIDES.

Perhaps the most important advances in insecticidal chemistry during the last ten years have been made in contact insecticides. The most important members of this group are soaps, oil emulsions, nicotine, derris, and pyrethrum.

Soaps.—Soft soap has long been used both as an insecticide and as a wetter. It is used at various strengths, generally from 5 to 15 lb. per 100 gallons of water. It is a cheap and fairly efficient spray for aphids, but to keep aphids in check the treatment must be repeated every week or two. It has the disadvantages that it is difficult to prepare, as the soap has to be dissolved in boiling water, and that it is unsuitable for use in hard water. The difficulty of preparation may be obviated by using a method introduced by Dr Martin at the South-Eastern Agricultural College, Kent, which has been extensively tried out by us and found very effective. To make 10 gallons of approximately a 1 per cent solution of soap, dissolve ¼ lb. of flaked caustic soda in 1 gallon of cold water and add to the solution 12 fluid ounces of crude brown oleic acid, stirring thoroughly with a stick. When thoroughly mixed make up to 10 gallons with water. This mixture has been used at Aberdeen for treating aphids, especially on rose bushes, and when applied at weekly intervals afforded a high degree of protection.

Some years ago it was decided to combine this soap spray with a fungicide to combat mildew, so that both pests could be treated at the same time. Trials of various substances showed that crude cotton seed oil was a cheap and reasonably efficient fungicide for mildew. A combined spray which we have tried over several years and found efficient contains 2 per cent crude cotton seed oil and 0·4 per cent sodium oleate. To make 25 gallons of this mixture dissolve ¼ lb. flaked caustic soda in about 2 gallons of cold water. In another vessel mix 4 pints of crude cotton seed oil and 12 fluid ounces of crude brown oleic acid and add this mixture to the caustic soda solution, stirring thoroughly with a stick. When properly mixed make up to 25 gallons with water.

Precautions.—As caustic soda is dangerous to handle it should be bought packed in ¼-lb. tins to reduce handling to a minimum. If any caustic soda comes into contact with the hands or clothes the part affected should be washed immediately, first with vinegar and then with water.

Hard Waters.—Ordinary soaps are useless in hard waters, but the difficulty may be overcome, as stated already, by first dissolving in the water ¼ lb. sodium hexa-meta-phosphate per 100 gallons of water.

Oil Emulsion.—The introduction of oil emulsions as insecticides is mainly due to American workers. They are principally employed for treating red spider. Mineral oils for use as insecticides must be of a high degree of purity, otherwise impurities present will burn the foliage. During the last few years the great oil companies have placed on the market special grades of oil for summer sprays. Kerosene has been used for many years as an insecticide, but it is far too impure to be safe with most plants. Recently there has become available a very pure grade of kerosene named 'Odourless Distillate,' which is ideal for a summer spray. This oil has a purity of over 99 per cent, and, although it is more expensive than ordinary kerosene, it is cheap enough for wide use as an insecticide. The makers give the following specification for this oil: specific gravity, 0·778; viscosity, 36, Redwood No. 1, at 100° F.; distilling range, 370° F. to 500° F.; unsulphonated residue at least 99 per cent, and leaves no unpleasant residue behind.

The oil is used as an emulsion at a concentration of 2 per cent, except for very tender plants, when the concentration is from 1 to 1½ per cent. This oil may be made miscible with water by dissolving in it cresylic acid soap as described under mineral oil winter wash. This miscible oil spray should not be used in conjunction with, or immediately before or after, lead arsenate sprays, since cresylic acid reacts with lead arsenate and liberates water-soluble arsenic.

A quick-breaking emulsion may be prepared as follows: place in a barrel or other container 2 gallons of water and add 2 fluid ounces of 28 per cent ammonia solution—ordinary household ammonia is about this strength. Add slowly, stirring all the time, 3 ounces of casein, stir for about 2 minutes, and then add 5 gallons of the oil, stirring briskly for several minutes. For a 2 per cent emulsion dilute 1 part of this mixture with 35 parts of water.

Nicotine.—Nicotine, while classified as a contact insecticide, is also a valuable stomach poison and also a fumigant. It is not injurious to foliage in any concentration. There are two forms of nicotine on the market—one a commercially pure form of the alkaloid itself containing 95 to 98 per cent nicotine, and the other a water solution of nicotine sulphate containing 40 per cent of nicotine. The nicotine sulphate solution is comparatively stable if protected from evaporation of the water. Pure nicotine must be tightly sealed or loss will occur by volatilisation. Nicotine sulphate is generally employed at the rate of 1 pint to 100 gallons of water, and the pure nicotine at 8 to 10 fluid ounces per 100 gallons of water. All nicotine solutions should have a spreader added to them for spraying, such as sodium lauryl sulphate or one of the proprietary spreaders. Generally 4 to 8 ounces of the spreader per 100 gallons of water will be sufficient. It is advisable to add 1 or 2 lb. of slaked lime to each 100 gallons of nicotine sulphate spray to increase the volatility of the nicotine.

Nicotine may be combined with lead arsenate, Bordeaux mixture, and lime sulphur sprays to form general purpose sprays.

Derris.—Derris powder consists of the ground roots of certain tropical plants belonging to the family *Leguminosæ*. Representatives of the genus Derris are found throughout the tropics, especially in the Malay States and South America. Powders obtained from different species are sold under the names of Derris, Cube, Timbo, and Barbasco. The principal toxic substance in all these plants is a complex chemical compound named Rotenone, having the formula $C_{23}H_{22}O_6$. Formerly the rotenone content of different powders varied greatly, but now methods of analyses have been evolved which enable different samples to be graded and standardised. A good quality of derris powder should contain from 4 to 6 per cent rotenone. In buying derris powder a standardised powder of known rotenone content should always be purchased in preference to powders of unknown quality. The great value of derris lies in the fact that although it is very poisonous to insects and other cold-blooded animals it is harmless to warm-blooded animals. Derris powder of 5 per cent rotenone content is generally used at the rate of 1 lb. of powder to 50 to 100 gallons of water. A derris spray should always contain a wetter such as soft soap or a proprietary wetting compound. Soya bean flour has also been added to derris sprays to act both as a wetter and a sticker.

A good derris spray is made up as follows: derris, 1 lb.; soap, 2 lb.; water, 50 gallons. Derris powder may be mixed with sulphur, but should not be used with lime sulphur or Bordeaux mixture.

Pyrethrum.—Pyrethrum is one of our most valuable contact insecticides. The use of pyrethrum flowers for insecticidal purposes appears to have originated in Persia. The Persian insect powder was made from *Pyrethrum roseum* and *P. carneum*, and was introduced into Europe early in the nineteenth century. In the middle of last century a new species, *P. cinerariæfolium*, was produced in Dalmatia and quickly superseded the Persian species. Although there are about a dozen members of the genus Pyrethrum which possess insecticidal properties, only *P. cinerariæfolium* is of commercial importance in Britain. Up to the outbreak of war in 1914 Serbia was the largest producer of pyrethrum flowers. The war cut down this production and enabled Japan to seize the market, and she still remains the largest producer. During the last few years the cultivation of pyrethrum has been undertaken in other countries, and the highest grade flowers are now produced in Kenya.

The active principles of pyrethrum are two complex chemical compounds termed Pyrethrin 1 and Pyrethrin 2. These substances belong to the chemical group known as esters, and, like all members of this group, are easily broken down by compounds containing strong alkalies, such as soap and washing soda. Pyrethrum sprays, therefore, should never be mixed with any spray containing such alkalies. They are also very easily destroyed by oxidation and bright sunlight. On storage the active principles gradually undergo decomposition and lose their toxicity. The rate of decomposition depends upon the conditions of storage, but under the most favourable conditions the powder will lose about half its pyrethrin content in a year. The total percentage of pyrethrins in a good commercial sample varies from about 0·75 per cent to 1·2 per cent, except Kenya pyrethrum, which contains about 1·5 per cent. For horticultural purposes extracts containing the active principles dissolved in mineral oil are generally used. When dissolved in high-grade mineral oil and stored in opaque sealed containers the pyrethrins are fairly stable, and an extract made by a reputable firm contains a standard amount of the toxic principles, generally from 5 to 8 per cent.

The value of the pyrethrins lies in their great toxicity to insects and relative non-toxicity to warm-blooded animals. They act chiefly upon soft-bodied insects and have little effect upon red spider or mites. To increase the value of a pyrethrum spray the active principles are dissolved in a mineral oil and then emulsified. In this way we get a spray which destroys both soft-bodied insects and red spider and mites. As the pyrethrins are broken down by sunlight a pyrethrum spray only remains active upon foliage for a period of about three weeks. A good mineral oil pyrethrum spray when diluted for use should contain from 1 to 2 per cent high-grade mineral oil and about 1 part pyrethrins to 40,000 parts of water.

STOMACH INSECTICIDES.

The stomach insecticides are poisonous substances which when sprayed upon the surface of a plant cause the death of parasites which eat the foliage and thus take the poison into their stomachs. For this purpose the arsenical compounds are the most important, although certain fluorine compounds are also valuable.

An interesting development in dry climates where irrigation is practised is the use of magnesium sulphate or Epsom salts as an insecticide. When some insects eat foliage treated with magnesium sulphate they die shortly afterwards. However, the use of this salt in the British climate is impracticable, except under greenhouse conditions, because it is readily soluble in water and is washed off by rain.

The stomach insecticide most extensively used in Britain is lead arsenate, although calcium arsenate, zinc arsenate, Paris green, and other substances are also used. The latter arsenical compounds, however, are less stable than lead arsenate and are more apt to break down and liberate water-soluble arsenic, which is poisonous to the plant. Fluorine compounds such as sodium fluoride and sodium silico-fluoride are also used as stomach poisons, but as yet, although they are less poisonous to human beings and stock than lead arsenate, they have not been widely adopted.

Lead Arsenate.—The lead arsenate used in this country is the di-plumbic arsenate and is available in three forms—namely, as a fine powder, as a paste, and as a colloidal suspension. High-grade lead arsenate must be high in total arsenic for optimum killing efficiency, low in water-soluble arsenic in order that burning of the foliage may be reduced to a minimum, and free from impurities. Lead arsenate powder should be free from lumps and grit and contain not less than 31 per cent of arsenic calculated as arsenic pentoxide, not less than 63 per cent of lead oxide, and not more than 0·5 per cent of water-soluble arsenic calculated as arsenic pentoxide.[1]

Lead arsenate paste should be of a uniform consistency, free from lumps and hard particles, and should readily rub down a fine cream with water. It should contain not less than 14 per cent of arsenic calculated as arsenic pentoxide, not less than 28·4 per cent of lead oxide, both calculated on the original paste, and not more than 0·5 per cent water-soluble arsenic expressed as arsenic pentoxide and calculated on the dry basis. Pastes are normally sold with a content of 15 per cent or 20 per cent of arsenic pentoxide.[1]

Colloidal lead arsenate should conform to the same chemical standards as the paste, but the particles are much smaller in size.

Because of the ease of handling and mixing, the paste and colloidal forms are generally preferred to the dry powder.

Lead arsenate spray is prepared by mixing 1 lb. of the powder or 2 lb. of the paste with 40 to 50 gallons of water. Owing to the extremely fine state of division, the colloidal lead arsenate has a much greater covering power than the other two forms, so that it is only necessary to use 1 lb. of 15 per cent colloidal lead arsenate to get the same result as 1 lb. of 30 per cent powder or 2 lb. of 15 per cent paste in a similar amount of water.

Lead arsenate may be mixed with Bordeaux mixture, nicotine sulphate, oil emulsions, lime sulphur or any of the wettable sulphurs, but cannot be mixed with any solution containing cresylic acid. In making a combined spray mix the other ingredients in the spray tank first, then mix the lead arsenate with a little water and add to the tank shortly before spraying.

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[1] Bulletin No. 82, Ministry of Agriculture and Fisheries. 'Specifications and Methods of Analysis for certain Insecticides and Fungicides.' 1938.

Paris Green.—This has been found a very effective poison in baits for slugs, but it is now being displaced by Metaldehyde. It is still used as a poison for 'grub,' the caterpillar stage of the Crane Fly or Daddy Longlegs. For this purpose it is mixed with moist bran and spread over the infested ground.

Metaldehyde.—Metaldehyde is an organic chemical compound which has been used for many years as a solid fuel in picnic outfits. It is sold by most druggists and dealers in picnic goods under the name of Meta Fuel, and is available as such in all parts of the country. This substance has been found to be very poisonous to slugs, snails and surface caterpillars, and makes a very efficient slug bait when mixed with bran. For use one stick of the fuel (about ⅐ oz. in weight) is ground to a fine powder and mixed with 2 oz. (or ½ pint) of bran. The bran is better moistened before mixing with the Meta. The mixture is scattered around the plants or laid in small heaps about one yard apart.

Precautions.—Meta is poisonous to all animals, and where fowls or other domestic animals may gain access to the bait it should be covered with a tile or a stone.

FUNGICIDES.

There are two important groups of fungicides—namely, the sulphur group and the copper group. The most important members of the sulphur group are lime sulphur, sodium polysulphide, and sulphur; while in the copper group we have Bordeaux mixture, Burgundy mixture, Cheshunt compound, and copper naphthenate. In addition to the sulphur and copper fungicides various other substances such as mercury compounds, formalin, and tar acid preparations are used as fungicides. Certain organic mercury compounds are used in the form of dusts.

Lime Sulphur.—Lime sulphur is the most important of the sulphur sprays used in this country. It is an efficient contact poison for certain scale insects as well as an important fungicide for several fungoid diseases. When sulphur is combined chemically with calcium under certain conditions it forms calcium polysulphide, the principal active ingredient in lime sulphur. Formerly lime sulphur was prepared at home, but now there are so many good commercial brands available at reasonable cost that, unless the operator has expert chemical knowledge, home preparation is not worth while. Lime sulphur solution should be clear and free from sludge and have a specific gravity of approximately 1·3. It should contain not less than 18·5 per cent in weight of polysulphide sulphur. For all practical purposes the operator should test the specific gravity by means of a hydrometer. The concentrated solution should be kept tightly sealed, because when it is exposed to the air it combines with oxygen and the polysulphide undergoes decomposition.

The concentration of the spray used varies with the season of the year. The amount of lime sulphur solution required to make 10 gallons of spray by diluting with water at different seasons is as follows: dormant season, 1 gallon; early spring, 2½ pints; mid-spring, 2 pints; and late spring, 1¼ pints.

Lime sulphur may be mixed with nicotine sulphate and lead arsenate for a general spray for both fungoid and insect pests.

Sodium Polysulphide.—There has appeared upon the market recently a sodium polysulphide solution. This solution is similar in properties to lime sulphur, but the makers claim that varieties of plants which are liable to be injured by lime sulphur are more resistant to the action of sodium polysulphide.

Sulphur.—Flowers of sulphur was one of the first fungicides to be used, but fell into disuse because of the difficulty of mixing it with water and getting it spread over the foliage. Methods have now become available whereby sulphur may be made to mix with water easily, and this wettable sulphur is displacing lime sulphur as a summer spray. Many sulphur-shy varieties, which are injured by lime sulphur, are not affected by wettable sulphur.

Sulphur for this purpose must be in a very fine state of division—a good sample should pass through a 300-mesh sieve. If the particles are coarser than this they sink too easily to the bottom of the bath when mixed with water.

Sulphur may be made wettable with water by simply mixing the sulphur with a wetting agent. One of the best wetting agents for this purpose is soya bean flour, which is much used in America and which acts as a sticker as well as a wetter. A good mixture of this kind is made by mixing 95 parts of sulphur with 5 parts of soya bean flour.

Another good mixture for plants which are very susceptible to sulphur burning is made up as follows: sulphur, 16 parts, by weight; slaked lime, 8 parts; calcium caseinate, 1 part—the whole being well mixed together. The inclusion of slaked lime in this mixture reduces the danger of sulphur burning.

A wettable sulphur spray should contain 6 lb. of sulphur in 100 gallons of water. Wettable sulphur may be combined with lead arsenate, nicotine sulphate, derris powder, and Bordeaux mixture in making general purpose sprays. A good general purpose spray can be prepared by mixing one of the above wettable sulphur mixtures with derris powder so that the spray contains 6 lb. sulphur and 2 lb. derris to 100 gallons of water.

Bordeaux Mixture.—For many fungoid diseases of plants Bordeaux mixture is the most widely used remedy. In this country, for instance, it is extensively used against potato blight and many other fungoid pests of vegetables, flowers, and fruit. When Bordeaux mixture is carefully made at home it is not excelled by any commercial brand. To achieve this result it is necessary to use materials of good quality.

Bordeaux mixture consists of a gelatinous, colloidal suspension of basic copper compounds, formed when a solution of copper sulphate (bluestone) is mixed with milk of lime. Many different formulæ are used in the preparation of Bordeaux mixture, but the most commonly used preparation contains 4 lb. copper sulphate and 4 lb. lime of good quality to 40 gallons of water. It is necessary to follow the directions carefully in order to make a spray of good quality which will not injure the foliage of plants, but which will stick to the foliage.

The quicklime should be as pure as possible. If the lime has been exposed to the air for some time so that a portion of it has become carbonated, a poor grade Bordeaux mixture will result. The quicklime should be slaked and made into a milk with a few gallons of water. It should then be carefully strained through a fine sieve to remove grit which might cause trouble in the sprayer. In all cases where lime is used in making sprays it should be treated in this way. The copper sulphate should be finely ground so that it goes into solution readily and should contain at least 98 per cent of crystallised copper sulphate.

Preparation.—If only a small amount of Bordeaux mixture is required it may be prepared as follows :—

1. Dissolve ½ lb. of copper sulphate in 2½ gallons of water and be careful to see that all the copper sulphate has dissolved. If there is any insoluble residue it should be strained off.
2. Slake ½ lb. of quicklime and add water to make 2½ gallons. This must be strained from all grit.
3. Pour these two preparations simultaneously into a third vessel and stir with a stick.

This will make 5 gallons of 4 : 4 : 40 mixture.

If large quantities of Bordeaux mixture are required it is advisable to make up strong stock preparations of copper sulphate and of milk of lime, each containing 1 lb. to a gallon of water. If stock preparations are covered to prevent evaporation they will keep for a long time. For use these stock preparations should be diluted with water before mixing. For example, to make 40 gallons of Bordeaux mixture from such stock preparations take 4 gallons of the stock solution of copper sulphate and dilute to 20 gallons, and in another vessel take 4 gallons of the milk of lime after mixing the stock preparation thoroughly and dilute to 20 gallons, and then add the copper sulphate solution to the lime. The Bordeaux mixture is now ready for spraying and should be applied immediately and not allowed to stand. The freshly prepared gelatinous suspension of basic copper compounds, if applied to the plant immediately after mixing, will adhere to the sprayed surface in appreciable amount for several months.

The effectiveness of most protective sprays depends to a large extent on the spreading and adhering properties of the materials. Bordeaux mixture satisfies the requirements in these respects fairly well, but methods have been evolved for improving it. The spreading property may be increased by the addition of a wetting agent. The chief wetting agents used for this purpose are sulphite lye and lime casein. Sulphite lye is a waste product from the manufacture of paper and is comparatively cheap. For use 7½ lb. of sulphite lye should be added to 100 gallons of Bordeaux mixture, or 3 lb. to 40 gallons. The lime casein spreader may be made by adding ½ lb. skim milk powder to 100 gallons of Bordeaux mixture and mixing it in well, when the excess of lime in the Bordeaux mixture will act on the casein and form a calcium caseinate.

The adhering properties may be increased by adding mineral oil or cotton seed oil made into an emulsion. Generally, 1 gallon of oil is added to 100 gallons of Bordeaux mixture. The oil emulsion is prepared by dissolving ¼ lb. of copper sulphate in ½ gallon of water and mixing with it ¼ lb. quicklime after slaking in ½ gallon water. These form a concentrated freshly prepared Bordeaux mixture. One gallon of oil is then poured slowly into this Bordeaux mixture and stirred vigorously until a smooth emulsion is formed. This emulsion is added to 100 gallons of Bordeaux mixture. It is very important that freshly prepared Bordeaux mixture be used for this purpose, or a poor emulsion will result.

Preservation of Bordeaux Mixture.—If it is not possible to use all the Bordeaux mixture within an hour or two after it is made, the mixture may be preserved by the addition of a small amount of sugar. The sugar retards the breaking down of the gelatinous precipitate which is essential for good adherence to the plant. For each 1 lb. of copper sulphate in the mixture ⅛ ounce of sugar should be added.

Precautions.—Copper sulphate solution should not be made or placed in iron, zinc or tinned vessels, because it corrodes these metals. The mixing should be done in copper or wooden vessels. It is generally done in wooden tubs or barrels. In dissolving copper sulphate the powder should be enclosed in a bag and suspended near the surface of the water. This will ensure that no undissolved particles will get into the solution and also that all the copper sulphate will be dissolved. The milk of lime should always be strained to remove grit. When Bordeaux mixture is properly prepared the copper is all precipitated. This is shown by the fact that the blue colour is all in the gelatinous precipitate and that when the precipitate is allowed to settle down the overlying liquid is free from colour.

Bordeaux mixture may be mixed with certain oil emulsions, with nicotine sulphate, and with lead-arsenate.

Burgundy Mixture.—This mixture is sometimes used in place of Bordeaux mixture, because it does not leave so much objectionable deposit, especially on small fruits, as Bordeaux does. The active principle is again copper, but the sticking powers of Burgundy mixture are not nearly so good as those of Bordeaux mixture.

Preparation.—The following formula is commonly used :—

Copper sulphate, 2 lb.
Sodium carbonate (washing soda), 3 lb.
Water, 100 gallons.

It is prepared in a similar manner to Bordeaux mixture. The ingredients are dissolved separately and then mixed together.

Cheshunt Compound.—This compound was introduced by the Cheshunt Research Station, and prevents many fungoid diseases which have their origin in the soil, such as those which cause the damping off of young plants.

Preparation.—Mix together thoroughly 2 parts by weight of finely ground copper sulphate with 11 parts by weight of finely ground ammonium carbonate, and store for at least twenty-four hours in a tightly stoppered jar. For use dissolve 1 oz. of this mixture in a little hot water and then make up to 2 gallons with cold water.

Only the freshly prepared solution should be used. To prevent waste, only make up the quantity of solution required at one time.

The dry mixture will keep indefinitely if it is stored in tightly sealed containers.

Copper Naphthenate.—Copper naphthenate is insoluble in water, but soluble in naphtha, white spirit, turpentine, &c. It possesses high fungicidal and bactericidal efficiency and is used for treating materials where resistance to rotting in water is essential. For this reason it is used for treating wood, canvas, jute, fishing nets, &c.

A 20 per cent solution in white spirit is recommended for the treatment and prevention of dry-rot in wood. For this purpose it is superior to creosote because it can be painted over the wood and acts as a priming coat as well as a preservative. Further, it has no harmful effect upon the eyes, skin or clothes, and does not smell strongly like creosote and does not increase the fire risk. One gallon is sufficient for about 200 square feet, and wood once treated is protected for all time. Sandbags and canvas tents are also protected against all forms of rot by impregnating them with a 15 to 20 per cent solution in coal tar naphtha. Concrete may also be protected against growths, such as fungus and lichens, which are apt to form upon damp concrete, by painting it with copper naphthenate solution. Recently copper naphthenate emulsions have been placed upon the market and have given promising results for treating concrete and sandbags. These emulsions have also given encouraging results as plant sprays.

DUSTS.

Dusts are applied dry and consist of insecticides or fungicides in the form of fine dry powders often mixed with an inert carrier. It is essential that all dusts should be very finely divided. At least 90 per cent should pass through a 300-mesh sieve. Certain forms of dusts—namely, seed dressing preparations—are now familiar to all farmers. The application of dusts is now extending to all field and garden crops.

The spraying of crops is generally recognised as being more efficient than dusting, but requires bulky equipment and the transport of large quantities of water. Dusts, on the other hand, are easier to handle, are immediately ready for use, and, because of the small weight per acre used, are more easily transported.

There are two types of dusts—simple mixtures and impregnated dusts. The impregnated dusts have the active ingredients combined with inert carriers and are more efficient than the simple mixtures. The preparation of the impregnated dusts requires chemical knowledge and it is not advisable to recommend them for home preparation. Simple mixtures are fairly efficient and can be easily prepared at home. It is essential that in this preparation care should be exercised to mix the ingredients thoroughly.

The inert carriers are used to dilute the active ingredients to reduce the initial cost of the dust. The carriers most commonly used are kaolin or china clay, talc, fuller's earth, bentonite, diatomaceous earth, and gypsum. These substances are all naturally occurring minerals, and, in addition to their fineness of division, possess good sticking powers. Recent research in the United States has shown that the addition of a very small amount of an organic soap greatly increases the sticking properties of a dust. The most suitable soap for this purpose which is available in this country is butyl-phenyl-phenol-sodium-sulphonate, known as Aresket. It is used at the rate of 1·6 oz. mixed with 100 lb. dust.

Preparation of Dusts :—

Nicotine Dust.—Mix together 7 lb. nicotine sulphate, 93 lb. bentonite, and 1·6 oz. organic soap.

Derris Dust.—Mix together 19 lb. derris powder, 81 lb. talc, and 1·6 oz. organic soap.

Sulphur Dust.—Mix together 60 lb. sulphur, 40 lb. bentonite, and 1·6 oz. organic soap.

Derris-Sulphur Dust.—Mix together 19 lb. derris, 25 lb. dusting sulphur, 56 lb. talc, and 1·6 oz. organic soap.

The ingredients should be weighed out and transferred to an old end-over-end barrel churn of a convenient size. Then add about ½ lb. rounded stones from 1 to 2 inches in diameter for each lb. of powder to be mixed. The churn should then be rotated until the ingredients are thoroughly mixed, after which the powder should be separated from the stones. Dusts are generally applied at the rate of 25 to 30 lb. per acre with the aid of a dusting machine, which blows the dust among the plants to be treated.

MERCURY DUSTS.

The mercury dusts have almost entirely replaced corrosive sublimate solution for seed dressing, and the treatment of certain insect pests which attack the roots of plants. Seed treatment with dusts, such as Ceresan, Agrosan G, and Segralin, is much preferable to any form of wet treatment, because it eliminates the very troublesome after-treatment of drying the seed. Dusts for seed treatment generally consist of 2 per cent of an organic mercurial compound, such as ethyl mercury chloride or phenyl mercury chloride, and 98 per cent of an inert carrier. They are used at the rate of 1 to 2 ounces of dust to 1 bushel of seed, but experiments at Craibstone, the experimental farm of the North of Scotland College of Agriculture, have shown that the amount of dust required depends upon the time of treatment. Seed treated in December only required 1 ounce of dust per bushel, while seed dressed immediately before sowing in spring required 2 ounces per bushel.

Great care must be exercised in dressing seed with one of these dusts, because of the extremely poisonous nature of mercury compounds. The seed should be treated in a closed container or a special seed-dressing machine, and the operator should be protected against inhalation of the dust. Treated seed, which is not required for sowing, should not be fed to animals or poultry unless it is thoroughly washed with water to remove the last traces of the mercury dust. It must always be borne in mind that mercurial poisoning is one of the most difficult forms of poisoning to treat.

Some of the most serious pests which market growers have to contend with are the Cabbage Root Fly and the Onion Fly. The damage by these pests is caused by the larval or maggot stage of the flies feeding upon the roots of the plant below ground level. This mode of attack makes it very difficult to control the pest, but recent experiments with calomel dust have been very successful. The dust, which consists of 4 per cent calomel and 96 per cent inert carrier, kills the eggs of the pest when laid upon treated soil. The dust is applied to the soil round the base of the plant, and, since attack may occur throughout the growing season, it should not be disturbed by close cultivation or weeding. Brassica plants should be given two dressings, the first within four days of transplanting and the second two or three weeks later at the rate of about ⅒ ounce per plant. Onions should also be given two dressings, the first when the seedlings appear above the ground and the second about ten to fourteen days later, each at the rate of about 1½ ounces per square yard.

COMPATIBILITY AND INCOMPATIBILITY OF INSECTICIDES AND FUNGICIDES.

The following table indicates the commonly used substances which may be safely mixed in the preparation of sprays and the combinations which should be avoided:—

TABLE.

The Substance below.	May be Combined with.	Should not be Combined with.
Soft Soap.	Nicotine Sulphate. Miscible Oils. Derris Powder.	Oil Emulsions. Pyrethrum Extract. Lead Arsenate. Lime Sulphur. Wettable Sulphur. Bordeaux Mixture.
Oil Emulsions.	Nicotine Sulphate. Pyrethrum Extract. Bordeaux Mixture.	Soft Soap. Derris Powder. Lime Sulphur. Wettable Sulphur.
Miscible Oils.	Soft Soap. Nicotine Sulphate. Pyrethrum Extract. Bordeaux Mixture.	Derris Powder. Lead Arsenate. Wettable Sulphur. Lime Sulphur.
Nicotine Sulphate.	May be mixed with any other spray material if added immediately before spraying.	
Derris Powder.	Wettable Sulphur. Soft Soap. Nicotine Sulphate.	Oil Emulsions. Lead Arsenate. Lime Sulphur. Bordeaux Mixture.
Pyrethrum Extract.	Oil Emulsions. Miscible Oils. Nicotine Sulphate.	Soft Soap. Lime Sulphur. Bordeaux Mixture.
Lead Arsenate.	Nicotine Sulphate. Wettable Sulphur. Lime Sulphur. Bordeaux Mixture.	Soft Soap. Miscible Oils. Any preparation containing Cresylic Acid.
Wettable Sulphur.	Nicotine Sulphate. Derris Powder. Lead Arsenate. Bordeaux Mixture.	Soft Soap. Oil Emulsions. Miscible Oils.
Lime Sulphur.	Nicotine Sulphate. Lead Arsenate.	Soft Soap. Oil Emulsions. Miscible Oils. Derris Powder. Bordeaux Mixture.
Bordeaux Mixture.	Oil Emulsions. Miscible Oils. Nicotine Sulphate. Lead Arsenate. Wettable Sulphur.	Soft Soap. Lime Sulphur. Derris Powder.

SHORT-TERM AGRICULTURAL CREDIT.

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THE problem of short-term (or production) agricultural credit is no new one, and, apparently, is still regarded in various quarters as far from solution, notwithstanding several attempts on the part of our legislature to cope with the problem in recent years. Recognising this inadequacy of our existing credit facilities to finance the farmer's day-to-day production of saleable crops, livestock and livestock produce, and smooth their flow to market, Parliament has already made two abortive attempts to supplement them. "Following the Report of the Committee on Agricultural Credit, 1923, the Agricultural Credits Act, 1923, was passed, and under Part II. of this Act the attempt was made to galvanise into life an organisation of co-operative credit societies which were, in essence, nothing more nor less than Raiffeisen Banks, in which the Government provided half the capital. . . . The Act of 1923 failed because it introduced an organisation entirely new to the farmer."[1] Following a further inquiry, and the publication of another report[2] by the Ministry of Agriculture and Fisheries, Part II. of the Agricultural Credits Act of 1928 (and a year later of a similar Act relating to Scotland) tried another way out of the impasse: it sought to enable the farmer to supplement his credit facilities by the creation of an agricultural charge in favour of a bank—*i.e.*, a chattel mortgage secured on all his farm assets; it failed, largely because it caused the farmer's other sources of credit, notably through his merchants, to dry up. The complete failure of these legislative attempts threw the farmer back on his traditional sources of short-term credit when in need of temporary accommodation—the joint-stock banks, the merchants, and the livestock auctioneers. And it emphatically demonstrates—if such demonstration were necessary—that the difficulty involved in financing agricultural production is due to two basic characteristics of the organisation of the agricultural industry, which distinguish it from other industries—first, the absence of joint-stock capitalisation which compels the farmer to rely upon his own financial resources and those of his near relatives; and secondly, the

[1] 'Financing the Farmer,' p. 10, by C. S. Orwin. Pub'd. O.U.P., 1933.

[2] 'Report on Agricultural Credit,' Economic Series No. 8.

impracticability of utilising to any great extent the bill of exchange, which is the mechanism of short-term finance common in other spheres of industry and trade.

THE NEED FOR CREDIT.

Before we pass on to discuss the existing sources of short-term agricultural credit, and their inadequacy or otherwise, we may perhaps with advantage classify the principal purposes for which a farmer may conceivably require temporary financial accommodation. These are, mainly, to cover the financing of either—

(*a*) Current day-to-day needs for wages, feeding-stuffs, seeds, and manures, &c., where he has commenced farming on his own account with rather slender financial resources; or where, owing to market prices or other causes, he has to 'carry' either his stock or his saleable crops for a longer period than he had bargained for; or where he has suffered a setback owing to stock losses, poor yields of crops, unsatisfactory prices, or other causes; or

(*b*) The purchase of his seasonal requirements of store stock, which, on many farms, is a severe tax on the farmer's financial resources; or

(*c*) The purchase of some improvement in the equipment of the farm, costly enough to disturb the normal farm budget —*e.g.*, a tractor and its complement of tractor-drawn implements (which may possibly run away with £500 or more), the installation of electricity (the cost of which may be swollen by a heavy line charge), a new threshing-mill, bruiser, &c., &c., or up-to-date milking plant, comprising a milking machine, steriliser, bottling plant, &c.

On some types of farms the need for short-term credit facilities is more urgent than on others. The arable farmer, for instance, must wait until his crops are harvested and, assuming a favourable outlet, sold, and until his feeding cattle and sheep (purchased months before) are fat enough for the market. Meantime, his outlay on wages, feeding-stuffs, seeds and manures, and overhead charges (frequently an unexpectedly heavy charge) continues to mount; and the financing of the final stages of the productive process and the holding of stocks for sale causes an ever-increasing strain on the farmer's cash resources; whilst his outlay is continuous, punctuated by marked seasonal 'peaks' caused, for instance, by the purchase of store stock, his income is slow, intermittent, and uncertain. Similarly, in the case of a hill sheep farmer although the wages and other expenses must be met month by month, all the sales for the whole year are usually com-pressed within a short space of time in the autumn, when the draft ewes, store lambs, and wool—the only saleable products—are disposed of. Furthermore, although, as the experience of the past few years has shown, the hill sheep farmer's costs year by year remain singularly rigid, with a tendency for wages and overheads to rise, his income, on the other hand, shows violent annual fluctuations. Not until after the autumn sales can he hazard even a guess as to whether he is making or losing money. The large dairy farmer alone is in the happy position—if he manages to avoid the heavy toll of disease—of being able to budget on the expectation that his farm income will roughly keep pace with his farm expenditure month by month; if he is retailing milk he can count on his daily drawings from his customers; if he sells his milk through the Milk Marketing Board he is assured of his regular monthly milk cheque from them, which in many cases to-day is supplemented by one or more of the substantial bonuses for which milk producers may qualify. He is, at all events, fortunate in having available a steady cash return to meet his current farm and household expenditure.

TIDING OVER DIFFICULTIES.

It is worthy of note in passing that in the East of Scotland (and quite possibly elsewhere, too) certain practices have gained prevalence which enable an arable farmer to eke out financial resources which do not run to the full stocking, equipping, and working of his farm. For instance, to avoid laying out money on store cattle he may let his cattle-courts in winter to a large grazier or auctioneer at so much per head per week. A common pre-war figure was 3s. 6d. to 4s. per week for turnips and straw—hardly a remunerative price—although much depended on the arrangement made with regard to the labour in attendance on the stock and on the nature and quantity of the concentrate ration fed by the owner of the cattle. In such cases, however, the Scottish farmer's traditional pride in his livestock leads him to count the days to the time when he wins through to a status of financial emancipation and can stock up his courts with his own cattle; only occasionally does one find arable farmers resorting to the letting of their cattle-courts solely because they consider the court-feeding of cattle to be unremunerative. Similar 'short-cuts' commonly practised are taking in cattle or sheep for summer grazing or letting turnips for sheep in winter.

Again, instead of growing potatoes on his own account he may let his potato land to a potato merchant, engaging to do all the man, horse, and/or tractor work (up to but not including planting), and to give the crop a good dressing of farmyard manure for £12 to £14 per acre or thereabouts. The farmer so doing benefits in that he relieves himself of all risk of poor yields and poor prices and damage or wastage in the pits; he is sure of his cash return even though it is a modest one, only barely covering the value of the dung and the work done; his land is improved by the unexhausted manurial residues from the heavy dressing of artificial manures usually applied by the merchant. Certainly he waives for a time all opportunity of 'cashing in' on a really good potato year, which comes from time to time, but the practice is essentially a means of insurance for the small grower. Apart from his artificial manure bills he saves the heavy outlay on seed potatoes—which may range from £4 to £8 an acre or more—and, if he bides his time, he can work his way in to the crop during a cheap seed year and start growing potatoes on his own account. A somewhat similar arrangement to the letting of potato land is common in the pea-growing districts of Yorkshire, where some large grower-merchants may take annually 500 acres of land for pea-growing; no doubt many other customs in other districts serve a similar purpose.

Both these devices have this in common—they are but stepping-stones towards financial independence, temporary expedients adopted by arable farmers whilst money is tight, especially if they have recently taken a farm which is just rather big for their purse. Dairy farmers and mixed farmers similarly situated often turn to retailing as a means of enabling them to accumulate additional capital—although retailing has many pitfalls for the unwary—or alternatively, they may build up a sizeable economic unit of either pigs or poultry which, granted good fortune, give high returns and quick capital turnover.

EXISTING FACILITIES: THE BANKS.

Notwithstanding these short-cuts, the farming community makes heavy calls for additional accommodation on the traditional sources of credit. First and foremost let us take the joint-stock banks, which, it has been officially stated, had advances outstanding to Scottish farmers amounting to over £7,500,000 at the 28th May 1938[1]; these bear interest at 4½ per cent on the fluctuating daily balance of secured overdrafts and 5 per cent on unsecured overdrafts. Demands for bank accommodation are of two kinds—

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[1] 'Scottish Farming: Tenth Economic Report, 1937-38.' The figures were furnished by the eight principal Scottish joint-stock banks.

(*a*) Seasonal accommodation for the purchase of store stock; these may be called self-liquidating overdrafts, since they are wiped out once the stock is sold.

(*b*) Fluctuating overdrafts more or less permanent in character which bad times or losses may cause to persist over a long period. The banks may often 'carry' these for a long time; they would periodically ask for a copy of their customer's farm balance-sheet, and although they might endeavour to reduce his overdraft where the margin of safety (*i.e.*, the surplus of assets over liabilities) was low, they seldom, so I am told, force him into liquidation.

It is held by many that the banks are the best channel to which the farmer should look for short-term credit—on the grounds that the making of loans is their normal function, that they have ample funds at their disposal, and that the rate of interest is known to the borrower. Actually, however, many farmers—especially when their financial position is not too secure—find their banker rather difficult of approach. But a sound borrower can always be sure of ample bank accommodation, the limit of which is determined not merely by his actual financial resources and the security he can offer, but by the banker's estimate of his character, his business ability, and his enterprise.

The main objection to bank credit is, in some cases, the local agent's lack of real insight into farming problems, which gives rise to much misunderstanding; and perhaps lack of continuity of policy where an agent is transferred elsewhere. But there would be less cause of discord if it were commonly realised that the banker's job is to supplement the farmer's own capital—not .to supply him with the whole, or nearly all of it; he usually can, by virtue of his long experience and his knowledge of men, shrewdly appraise the credit-worthiness of potential borrowers; those refused are generally not very sound.

If any criticism is to be levelled at the joint-stock banks of this country in their attitude towards agriculture, it is that, notwithstanding all the resources at their command, they should set their faces rather rigidly against granting a generous measure of financial assistance to the young farmer embarking on a farming career with very limited capital resources, however enterprising and promising he appears to be. Critics often allege that the banker can "never go beyond his paper"; hence, although the man of substance, well established and able to offer adequate security, need never be afraid of asking his bank manager for an overdraft, the man most in need of temporary accommodation, to enable him to go ahead with plans for increasing the nation's food supply, receives a very cold welcome from the banker. His whole farming career may be jeopardised because the banker, thus early, regards him as not 'credit worthy'; more likely, however, he seeks temporary accommodation elsewhere, usually with more success.

MERCHANT CREDIT.

Agricultural merchants — seedsmen, feeding-stuffs and manure merchants, agricultural implement firms, millers, and tradesmen of various kinds—are, on the other hand, much more easy of approach to the farmer requiring temporary accommodation. Generally speaking, they give their customers every consideration, which springs from their first-hand knowledge of, and direct contact with, the industry, and a ready understanding of the problems and setbacks with which the farmer, perhaps through no fault of his own, is frequently faced. It would almost be true to say that the merchants *expect* to have to grant credit to the majority of their customers, even though it is well known that the man able to pay spot cash can generally drive a keener bargain than his less fortunate fellows; in many cases tradesmen delay submitting their accounts for a considerable period—*e.g.*, seedsmen may not send out their statements covering their customers' purchases of grass seed, seed grain, &c., bought in the spring, until the following December, or even later, so that fully nine months must inevitably elapse before they can possibly receive payment. It would be extremely difficult to hazard a guess at the total amount of farmers' indebtedness to their merchants; it is quite likely that it exceeds the total of the bankers' advances to their customers. Sometimes, especially during an agricultural depression, a merchant will 'carry' his customers for long periods in spite of rising indebtedness, in the hope that when things take a turn for the better he will ultimately be paid in full.

Inevitably, merchant credit is sometimes subjected to very harsh criticisms. In the first place it is asserted that heavy rates of interest are charged on overdue accounts, the precise rate being unknown to the farmer. Actually there are great variations amongst merchants with regard to this matter; in some cases interest is only charged where accounts are very long overdue, in the hope that it will act as a lever to secure more prompt settlement of their accounts, and the rate charged may be well below 5 per cent per annum. It is further alleged that a farmer may find his credit cut short with very little notice by his merchant, and at a time inconvenient to the farmer; in these days of keen competition, however, most firms are only too anxious to do business with anyone, provided they think they will in due course be paid; only in extreme cases would they resort to such drastic action as cutting off a man's supplies of raw materials. Hence the theoretical objections raised against merchant credit are most difficult to uphold in practice. Undoubtedly agriculture is very dependent on the goodwill of its allied and ancillary industries. Sound, reputable firms of merchants—often family businesses with the traditions of generations behind them—are usually run by men with a wide knowledge of local agricultural practice; they can, as a rule, form a very shrewd opinion as to whether their customer is a 'good farmer,' deserving of every consideration from them, far more easily than the banker. And for that reason many a successful farmer of to-day has cause to be grateful to his merchant, who, at the outset of his farming career, undertook to 'see him all right' for his foodstuffs, manures, &c.

AUCTIONEERS' AGREEMENTS.

Similarly, auctioneers advance considerable sums of money to farmers, particularly in connection with the purchase of store stock—*e.g.*, store cattle required for indoor fattening in the courts, or hoggs for running on the foggage in autumn, or wintering on turnips. Livestock auctioneers in Scotland readily grant credit facilities to those of their customers who are well known to them as being financially sound; and any livestock purchased by such a customer is credited to an open account in the customer's ledger; he is, in effect, 'carried' by the livestock auctioneer until the sale of the stock through the fat ring ultimately puts the customer in funds again. It is not unusual for the firm's invoices to state that "Interest at Bank Overdraft Rates is charged on overdue accounts."

Where, on referring to his customer's banker, the auctioneer finds that a farmer is not in a very sound financial position, the latter will be asked to complete what is known as an *Auctioneer's Agreement.* Under this agreement the livestock covered by it remain in law the property of the auctioneer; they are carried by the farmer at so much per head per week during winter, or at so much per head for the grazing season in summer; the farmer also may receive 75 per cent of the cost of any purchased foods, but he would be charged with interest on the cost of the cattle at 5 per cent per annum, the balance (either way, it is, unfortunately, necessary to add) being struck when the stock are sold.

Such agreements make the legal position of the auctioneer very secure; moreover, the farmer takes all the risks of fluctuations of market prices. A farmer can thus obtain all the credit he needs for the purchase of store stock, although the auctioneers rather discourage the purchase of breeding stock on such terms. Actually, charging interest at current overdraft rates, the auctioneer is thus acting as intermediary between the banker and the farmer; in close contact with agriculture, and possessing a good knowledge of both the business ability and farming skill of his customers, he probably errs very seldom in his judgments, and acts as a useful sieve with regard to applications made to him for short-term credit.

There is, no doubt, a danger attached to these auctioneers' agreements in that, quite unconsciously, they may enable a farmer to obtain, all told, too much credit from the various sources open to him—*i.e.*, his banker, his merchants, and his auctioneers; if, for instance, a farm is fully stocked with cattle belonging, in effect, to an auctioneer, a firm of seedsmen or manure merchants seeing these beasts in the farmer's fields, may, under the impression that they were the farmer's own cattle, easily over-estimate the soundness of his position and grant him too generous credit facilities. In such cases the merchant has every right to feel aggrieved; but this contingency is sometimes avoided by the voluntary interchange of information amongst merchants, &c., regarding their customers' obligations.

If we bear in mind that in addition to calling on the above sources of credit as the need arises the farmer may also be granted a temporary respite by his laird with regard to his half-yearly rent in bad times, there appear to be ample grounds for stating that, taken altogether, our short-term agricultural credit facilities are adequate for the industry; and that although on theoretical grounds they may be open to certain objections, yet on the whole they work reasonably well. Hence, recalling the utter failure of attempts to deal with the problem by legislation in recent years, it is clear that there is no urgent or widespread demand from farmers in this country for the introduction of any elaborate new short-term credit system, or the setting up of imposing credit structures like those in existence in many overseas countries. Moreover, there is always something to be said for the argument that things should never be made too easy for a man taking or running a farm, for "A further qualification for success is to have learnt the value of thrift. A man who has himself saved his money, earned it by the sweat of his brow and made sacrifices to accumulate it, realises its value and makes the best use of it; whereas the man who has it lent, or given, or left him, is more likely to take it for granted."[1]

INTERMEDIATE CREDIT FACILITIES.

If there is any major defect in our existing credit facilities it is to be found not in connection with either long-term or short-term credit, but rather with what may be termed intermediate credit, and this therefore merits special consideration. For many years, through the Lands Improvement

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[1] A. G. Ruston quoted by Astor & Rowntree, 'British Agriculture' (p. 352).

Company (incorporated under special Acts of Parliament in 1849), landowners have been able to obtain loans for the purpose of effecting certain scheduled types of improvements, including :—

1. The erection of farmhouses and buildings (including dairies, Dutch barns, silos, &c.), and structural alterations and additions thereto.
2. The erection of farm-workers' cottages, or alterations and additions thereto.
3. The installation of electricity, or of a water supply, with the construction of pumps, windmills, wells, reservoirs, &c.
4. The drainage, or fencing, or warping, or enclosing of land.
5. The erection of a threshing-mill, or the construction of an engine-house.
6. Afforestation or the making of fruit orchards.
7. The redemption of tithe.

The Company advertises regularly in farming journals and enjoys a good reputation amongst the agricultural community. Its loans must be approved by representatives of the Ministry (or Department) of Agriculture, after detailed plans and proposals have been received, and the property has been inspected on their behalf. Secured on the rental value of the property concerned, and repayable by equal half-yearly instalments of capital and interest spread over a period not exceeding forty years, the loans have, since 1936, been made at 3¼ per cent net interest, as against 4½ per cent to 4¾ per cent formerly. For example, Farmer A. (an owner-occupier) takes advantage of the facilities offered by the Company to assist him in financing the installation of a threshing-mill and trusser, which cost him £278, 10s.; it is agreed that he shall repay the loan over a period of twenty years. The Company, after referring to their actuarial tables and computing the total amount of interest chargeable before the loan is finally extinguished, assess his yearly contribution to them at £19, 1s. (making £381 in all). By making a half-yearly payment of £9, 10s. 6d. for the next twenty years he wipes out both the capital and interest of the loan without hardly disturbing his normal farm budget at all.

All told, the Lands Improvement Company, catering for such specified improvements, has loaned to agriculturists over £15,250,000 during the ninety years of its existence; yet when one thinks of the many thousands of acres of good agricultural land lying undrained, uncultivated, unproductive —as derelict as the scuttled hulk of the *Graf Spee*—of the countless farmsteads where the accommodation and lay-out of the premises are totally unsuitable for modern requirements, and of the many farms where capital expended on some improvement or other would undoubtedly yield a handsome return wholly disproportionate to the outlay involved, one begins to appreciate the fact that any work so far done in this direction has but touched the fringe of the job.

Why is it that more extensive use has not been made of the Company's loan facilities? Is it that the terms are not sufficiently attractive to the landowning classes? Is it that our present generation of landowners no longer command sufficient capital resources to contemplate embarking on any ambitious scheme of improvement, however necessary, on their already heavily encumbered estates? If so, it is regrettable that the task of bringing back the whole of our agricultural land, the nation's heritage, to full production should be shelved—a job which in the national interest should be tackled at once in this time of emergency. But probably it would encourage a greater demand for the services and facilities of the Company if two amendments were effected in its constitution: first, the abolition of the regulation that any proposed loan must be advertised for two weeks in the local Press before work can be commenced on the scheduled improvement—a small matter which does undoubtedly tend to deter many would-be borrowers who shun such publicity; and secondly (and much more important), the extension of the approved list of scheduled improvements eligible for loans.

This is all the more necessary in view of the fact that the past ten years have witnessed a marked transition towards increasing mechanisation on many up-to-date farms as a means of securing more economical working and increased production. Tractors and tractor-drawn implements, grass driers, haymaking machinery, milking machines and modern dairy plant, and the like improve in technical efficiency and become more and more indispensable year by year; the continuance and intensification of present difficulties with the farm labour supply will accelerate this tendency towards mechanisation. Yet all these costly items of plant and machinery are outside the scope of the loan facilities offered by the Company. Would it not be conducive to more efficient and progressive agriculture if these, and similar implements, could be purchased on easy terms with money borrowed at very low rates of interest (say, 2 per cent per annum), with capital and interest repayable in equal quarterly instalments over a period of three to five years?

SMALLHOLDINGS.

Are there any problems relating to short-term or intermediate credit which are peculiar to smallholdings? Let us take the type of holdings which has come into prominence these last few years in the East of Scotland—the 3-8 acre 'new type' holding, usually carrying poultry, or pigs, or market-gardening in some form or other, or some combination of these three enterprises. It is a well-established fact that most smallholdings usually carry a disproportionately large share of tenants' working capital in implements and equipment. 'Dead stock' absorbs far too large a share of their available capital, and when so much is sunk in implements, poultry-housing, or even bricks and lime, their turnover is perforce relatively slow. Without delving too deeply into problems of the internal organisation of smallholdings which are hardly relevant to the subject of this article, it may be stated that the root difficulties of smallholdings are the closely allied, closely interwoven problems arising from lack of capital, lack of credit, and lack of co-operation. Even on these very small holdings, where specialisation and high intensity of production must be the keynote of the whole organisation if the holder is to work on a scale big enough to give him full-time employment and a reasonable prospect of making a modest livelihood, he soon finds that he needs to have command of a considerable amount of capital; and unfortunately he must lay out a large proportion of his all-too-slender savings on either a piggery, or a tomato-house, or poultry-houses and appliances, or a rototiller.

In many cases lack of capital precludes all possibility of the man starting out on a big enough scale, or attaining it quickly. And whereas co-operative action amongst the holders on a complete colony might enable them all to effect big economies in the purchase of feeding-stuffs, housing materials, &c., as well as to market their eggs and other produce to better advantage, one of the biggest deterrents against any such much-needed measure of co-operative self-help is the fact that some of them, in arrears with their feeding-stuffs bills, are reluctant to run any risk of this state of affairs being brought to light and discussed by their neighbours. If provision could be made for *intermediate* credit facilities—*i.e.*, for approved development loans repayable at modest rates of interest over a long period, it would be a godsend to many holders at present struggling with adversity. Even for the general stocking and equipping of holdings at entry, there is much to be said for a considerable extension of the facilities afforded on a modest scale of late years by the Scottish Land Settlement Credit Association in the East of Scotland, which has furnished a few men with the nucleus of their working capital for a smallholding, though not always with unqualified success.

A WAR-TIME DEVELOPMENT.

It is appropriate that a brief reference should be made to the special credit facilities recently made available by virtue of the Agriculture (Miscellaneous War Provisions) Bill[1] for farmers, who, under the instructions of their County Agricultural Executive Committee, are bringing more land under the plough as part of the Government's increased food production campaign. Feeling that there may be a minority of farmers who find difficulty in financing the operations connected with this increased cultivation (whose ordinary sources of credit are insufficiently elastic to enable them to carry out their programme of increased production), the Government have now arranged, in co-operation with the banks, for special credit facilities to be made available for that purpose. In Scotland such applications will be handled by the eight joint stock banks, and loans will bear interest not exceeding 5 per cent per annum ; they must be utilised solely for defraying the additional costs thereby incurred on cultivations, seeds and manures, harvesting, new implements, &c., after such costs have been duly certified by the Agricultural Executive Committee as both necessary and reasonable ; and the borrower undertakes to repay the loan (which is kept in a separate bank account) on a stipulated date. It is probable that only those men who have exhausted all other possible sources of credit will seek to obtain these special loans. The total volume of such loans is therefore not likely to be large ; and in all probability they are hardly likely to cause any appreciable difference to the farmer's normal credit supplies.

CONCLUSION.

To sum up, it may be stated that an impartial observer might be prompted to remark rather cynically that our short-term agricultural credit system is no system at all ; and in comparison with, say, the imposing edifice of agricultural credit in U.S.A. it is but another truly British example of makeshift and compromise. But notwithstanding the inferior position so long held by the agricultural industry in the national economy of this country, the makeshift system works reasonably well. There is no clear indication of any widespread demand for increased short-term credit facilities amongst the farmers ; it is, in fact, the contention of many that if credit facilities were more easily available, and taken up by the farmer, they would be but another millstone round his neck. Given reasonable prices for crops and stock, they say, and a return to more normal conditions, the farmer would have small cause to worry about agricultural credit, since anyone who really deserves it can obtain all the credit he needs. And there is much to support this view.

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[1] This was first made public on 16th March 1940.

SCRAPIE.

By PROFESSOR J. RUSSELL GREIG, Director, Moredun Institute, Animal Diseases Research Association, Edinburgh.

THE nature of the disease to which the name "Scrapie" is usually applied has long remained obscure. It is perhaps for this reason that the names by which the disease is known are colloquial in character and refer to certain of its more outstanding symptoms, particularly the persistent itch and the disturbances in gait; thus in England it was known as the rubbers, the goggles; in Scotland as scrapie, cuddy trot, and yeuky pine; in France it is named *la tremblante* (the trembles); and in Germany is referred to as *gnubberkrankheit* (itching disease) and *traberkrankheit* (trotting disease).

HISTORICAL.

Scrapie appears to have been in existence in this country during the last two hundred years, and there is evidence of its occurrence throughout the latter part of the eighteenth century in Germany and France, countries in parts of which it is still prevalent.

Scrapie has been investigated in this country particularly by Stockman, M'Gowan, M'Fadyean and Gaiger, and the two first-mentioned authors have furnished historical accounts of the disease in Britain.

According to M'Gowan scrapie was first recorded in England in 1732; it does not appear, however, to have become prevalent until the later decades of the eighteenth century. It was then of common occurrence in Lincolnshire, Norfolk, Cambridgeshire, Wiltshire, Hampshire, Dorset, and Yorkshire, but apparently was not recognised in the Border counties of Scotland until after 1800; records, however, show that it was well known in Roxburghshire in 1850.

The earlier literature appears to indicate that on the Continent Merino sheep were particularly susceptible to attack, and it has been suggested that it was as the result of the various transportations of this breed that the disease was dispersed. German writers state that it was introduced into Germany by the importation of Merinos from Spain in 1765, and that the subsequent distribution of the disease followed that of the Saxon Merinos. Hurtrel D'Arboval, however, believes that there is evidence that the disease was known in Germany previous to 1750, that is at a time earlier than the first introduction of Merinos to that country. Stockman suggests that the first recognition of scrapie in France seems to have been made after the Merino importations of 1867-76; on the other hand, this is difficult to reconcile with the fact that scrapie existed in France even previous to 1848 when Roche-Lubin published an accurate account of the disease.

Stockman also pointed out that flocks of Merinos were imported into England about 1799, and that it was about this time that the prevalence of the disease was first recorded by English writers. He further suggested that, since the Merino was crossed with the Leicester, this might account for the occurrence of scrapie in the Border Leicester breed to-day. This view, in the writer's opinion, should be accepted with reserve. Bertrand, Carré, and Lucam state that in the literature there exists no reference to the occurrence of scrapie in the Merino or in its several crosses, and, in point of fact, it is not improbable that scrapie existed in this country long before the end of the eighteenth century, and that it was only when serious efforts to effect wool improvement increased the economic importance of sheep husbandry—and incidentally brought about the introduction of the Merino—that the disease was more clearly recognised and became the subject of record.

In France scrapie is largely confined to the Department of Aveyron, where it is particularly prevalent in the Larzac breed. In Germany and Austria, according to Friedberger and Fröhner, the disease affects the Electoral sheep rather than those of the large, coarse Negretti breed, and is most prevalent in Saxony, Moravia and Silesia, in which provinces the Electoral type of sheep is commonly bred. The disease appears to be more frequently encountered in Prussia and Saxony than in South Germany.

BREED INCIDENCE.

In this country sheep are the only animals known to become affected with scrapie; on the Continent the disease has been recorded also in the goat, but the accuracy of the available records is doubtful.

In Britain scrapie commonly affects the Border Leicester breed and its crosses, the Half-Breds (Border Leicester–Cheviot cross), and the Cross Suffolks (Suffolk–Half-Bred cross). It also frequently occurs in the pure Cheviots. Other breeds are not immune to the disease, but its incidence in Scottish Blackfaces is remarkably low. Scrapie is relatively rarely met with in the Border Leicester–Blackface crosses, the so-called Greyfaces or Mules.

AGE INCIDENCE.

Scrapie is very seldom observed in sheep under eighteen months of age. Gaiger, however, records a case in a thirteen-months-old ewe, and the writer has records of its occurrence in a fifteen-months-old ram and also in a virgin gimmer and in a lambed gimmer of the same age, while Stockman states that he has observed its occurrence in sheep at the ages of nine and a half, eleven, and fourteen months. It most commonly attacks sheep of about two years of age, whether these be lambing ewes, virgin ewes, rams or wethers (castrated males), but the disease is seldom seen in wethers, as they are usually sent to the abattoir before they are two years old.

There appears to be no maximum to the age incidence, and cases of scrapie in nine-years-old sheep of both sexes have been observed.

PREDISPOSING FACTORS.

(1) *Environmental Conditions.*—In this country scrapie is mainly found in parts of Northumberland and in the eastern Border counties of Scotland, and it would now appear to be almost entirely absent from those parts of England in which it once prevailed.

The precise significance of this observation is difficult of interpretation, but there is a considerable volume of evidence which suggests that the occurrence of scrapie is, at least to some extent, controlled by environmental conditions. This involves the assumption that in non-scrapie areas there exist one or more factors which in some manner tend to prevent the continuance of the disease, or alternatively, that in scrapie areas there obtain certain factors which act as excitants to its production.

It has been frequently observed, for example, that when sheep from infected flocks are transferred to parts of the country in which scrapie does not occur as an enzootic the disease may develop in these sheep or their immediate progeny, but it soon tends to disappear. Again, when a lot of lambs from a scrapie flock has been divided and sold to two different farms, scrapie may develop on one of these, but may fail to manifest itself on the other. Similar experiences are recorded by Continental observers. There is a general (although perhaps unfounded) belief among shepherds that the disease is more likely to become prevalent in light as distinct from heavy, clay soils.

While this type of evidence seems to suggest the existence of local controlling factors, it is to be understood that if such exist their action is only limited in degree, since, as will later appear, there is now evidence that the actual cause of scrapie is a specific infective agent.

(2) *Inbreeding.*—It is widely believed that inbreeding is an important predisposing factor in the development of scrapie, and it is true that the disease not infrequently occurs in sheep the parents of which are closely related. Continental authorities have observed that the periods when scrapie was most prevalent coincided with those during which intensive inbreeding for the purpose of breed-improvement was practised. These observations, as has already been indicated, may be explained on the assumption that because of the greater attention then given to sheep husbandry the occurrence of the disease became more clearly recognised. It is also true that scrapie occurs commonly in Half-Breds obtained as first crosses from a Border Leicester ram and Cheviot ewes and in Cross Suffolks, the progeny of a Suffolk ram with Half-Bred ewes, and while inbreeding has been intensively practised in Border Leicesters, Cheviots and Suffolks, the cross progeny might be expected to be relatively free from scrapie if inbreeding *per se* were an important predisposing factor.

(3) *Influence of Sexual Crises.*—The disease most commonly attacks gimmers—that is, ewes at about two years old—towards the end of their first pregnancy and during the period of subsequent lactation.

Further evidence that a sexual crisis may precipitate an attack is found in several observations to the effect that when gimmers, because they are in poor condition, are not mated until they reach the age of approximately two years six months, the disease in these most commonly develops at three years old—that is, at about the time they give birth to their first lamb. Scrapie also frequently appears in older ewes soon after they have been mated. In rams, the disease commonly develops soon after they have completed their period at stud, and also occurs shortly before the stud season commences. On the Continent it is believed that breeding from immature sheep may cause them to contract the disease.

These facts suggest that the physiological crises associated with mating, pregnancy, and parturition in some manner precipitate the manifestation of the disease.

(4) *Feeding.*—While it is true that scrapie occurs in sheep on 'poor keep' as commonly perhaps as it occurs in those receiving a nutritious diet, there are several published observations which indicate that heavy feeding tends to predispose to attack. It is also believed that fat 'soft' sheep are particularly susceptible. The records relating to the alleged

effects of nutritional factors are, however, of a highly conflicting character.

INCIDENCE.

When the disease is established in a flock, the incidence rate presents wide variation and commonly falls between 4 per cent and 20 per cent. In some flocks the incidence is so low that only occasional cases occur throughout a period of several years. Very occasionally, without obvious reason, the number of cases in a scrapie flock may rise rapidly and may even attain a figure of over 50 per cent.

SYMPTOMS.

The onset of the disease is insidious, and only an experienced shepherd may be able to recognise the earliest signs.

The sheep is nervous, apprehensive, and more excitable than usual. If closely watched fine tremors extending over the head and neck are observed; these cause slight but very rapid nodding movements. If the animal be rounded up it becomes tense with excitement and rapid muscular tremors particularly affecting the thighs and flanks are evident. The head and neck are carried high and somewhat stiffly; the facial expression is staring and fixed, and the ears not infrequently assume an unnatural position. Grinding movements of the teeth are commonly evinced.

Thirst is a frequent symptom, and the affected sheep may drink large quantities of water. There is no diarrhœa, but if the animal be excited quantities of fæces and urine may be involuntarily passed at short intervals. The fleece becomes lighter in colour and loses its lustre. The bleating is somewhat feeble, husky, and tremulous.

The most characteristic clinical feature is the development of pruritus, or itch, which, frequently commencing in the region of the rump and the loins, extends over the whole body. When the skin, particularly that of the back, is rubbed, the ‘scratch reflex,’ evidenced in nibbling movements of the lips and vigorous wagging of the tail, is exhibited; in many instances the itch becomes extreme and the animal is unable to rest for any considerable length of time.

Although the appetite remains unaffected almost throughout the entire course, feeding and rumination may be imperfectly performed because of the severe skin irritation. The sheep repeatedly rubs itself against fixed objects, but, apart from the abrasions on the skin and the loss of wool which consequently result, no lesion of the skin is observable. As a result probably of the constant torment of irritation emaciation

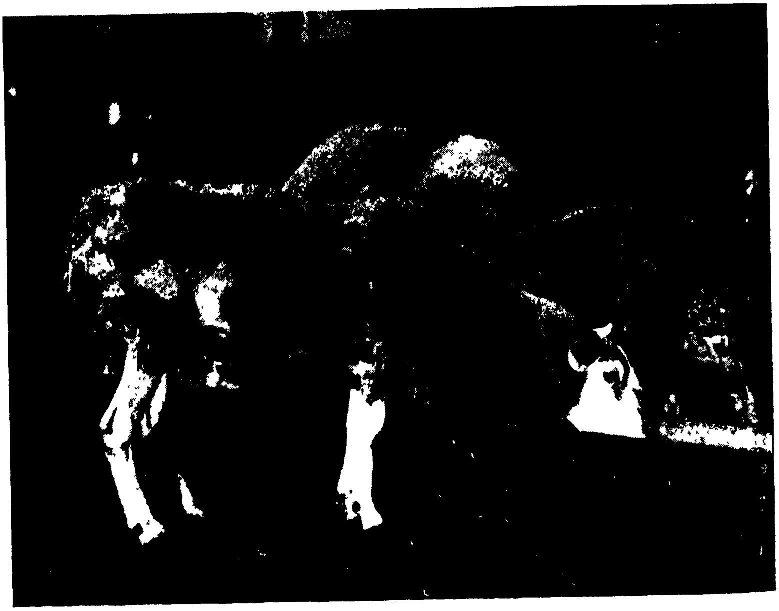

Fig. 1.—*Scrapie—Advanced case showing loss of wool with abrasions on the face and hind-quarters.*

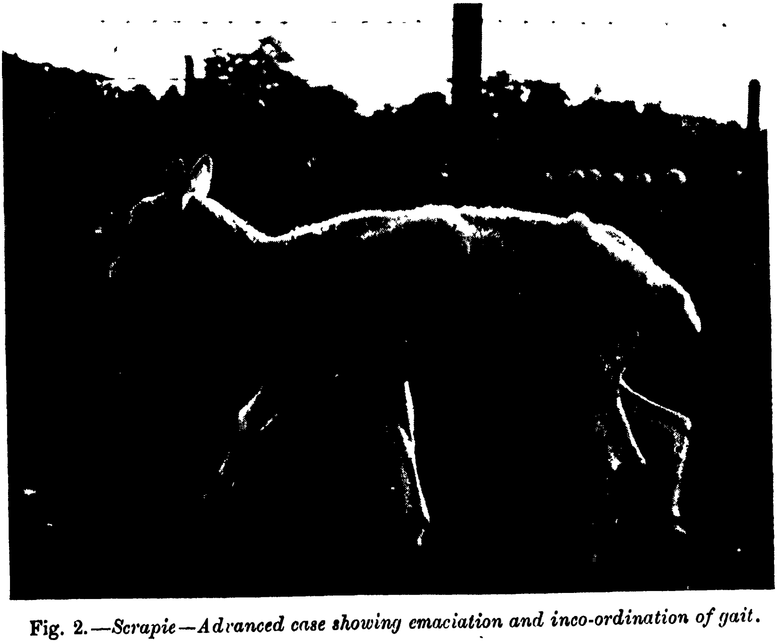

Fig. 2.—*Scrapie—Advanced case showing emaciation and inco-ordination of gait.*

and weakness are progressive, and inability to rise is a common feature of the later stages. The temperature throughout the course of the disease remains approximately normal.

There frequently coexist with these symptoms various motor nervous disturbances, including aberrations of gait, epileptiform convulsions, and paralysis of the hind-quarters. Many cases also exhibit erratic and blundering movements, and when made to trot a number show a peculiar gait in a high-stepping action of the fore-legs with or without 'rolling' or galloping movements of the hind-legs. There is commonly in evidence imperfect ability to extend the hind fetlocks, so that the hooves are slightly trailed along the ground. When hustled or exerted the sheep, after galloping for a few yards, may suddenly develop convulsive seizures; these are immediately followed by a varying degree of coma, but after lying quietly for some little time consciousness returns and a condition of relative normality is rapidly regained. In a number of instances death occurs suddenly during a convulsion.

When the disease attacks a nursing ewe the lamb appears to be in perfect health so long as it receives a sufficiency of milk.

While pruritus is a characteristic feature of scrapie, in a number of cases it is comparatively mild in degree, and in rare instances no appreciable skin irritation is evident. Skin eruptions on the face, neck, and legs have been observed in rams which, although they themselves did not develop symptoms of scrapie, were bred in infected flocks and had sired lambs in which the characteristic symptoms of the disease later developed. Gaiger records an instance in which there was brought on to a clean farm a ram which was in relatively poor condition and which developed eruptions on the skin of the fore-legs. The animal was retained in the flock for four years, and although during that time he did not develop symptoms of scrapie the disease developed in each 'get' of his progeny when they became gimmers. Gaiger states that in the case of one lot of forty-five ewe lambs sired by this ram every one became affected with scrapie at about the time she gave birth to her first lamb.

The symptoms tend to increase in intensity throughout the course of the disease.

Scrapie is generally regarded as invariably fatal, although there exist well authenticated records of several cases in which spontaneous and complete recovery apparently took place.

COURSE.

The course of the disease shows marked variation in its duration. Instances are known in which a fatal termination was reached within fourteen days after the first observable signs of illness, but usually the malady is chronic in type and runs a course of six weeks to six months or longer before terminating in death.

The course is of relatively shorter duration in those sheep which were in a debilitated condition at the time of attack, and the disease is believed to assume a more acute form in summer as compared with winter-time.

In a few observed cases the course of the disease has been extraordinarily prolonged. In one case recorded by Stockman death occurred eleven months after the first appearance of the disease, and the writer had a case under observation for fifteen months. These animals were, however, maintained at research institutes under comparatively sheltered and generally favourable conditions.

A case in which the course was remarkably prolonged, following the repeated administration to the affected animal of an essential oil, may be recorded here in some detail.

Mr Lothian, Veterinary Surgeon, Duns, had informed the writer that in his experience the repeated administration of oil of turpentine to flocks in which the disease was prevalent appeared to possess some preventive value, and that in a few instances the administration of this drug to affected animals seemed to ameliorate the symptoms.

Accordingly, on 19th November 1931, two ewes suffering from typical scrapie each received an emulsion containing oil of turpentine. The administration of the drug was repeated twice weekly for four months. Within a few weeks after the commencement of treatment both sheep appeared to have improved in their general physical condition, but the symptoms of scrapie were still evident.

Four months after the commencement of treatment one ewe died from a cause unconnected with the disease, and the treatment was then discontinued in the case of the other ewe. This ewe markedly improved in her physical condition, but the symptoms of pruritus, although less intense, still continued in evidence. The ewe became pregnant in November 1932, and in due course gave birth to a lamb which, however, died within a few days after birth. The ewe herself died from an undetermined cause on the 9th June 1933, that is about one year and seven months after having been first placed under observation.

One cannot say whether in this particular case the administration of oil of turpentine was responsible for the marked prolongation of the course of the disease, but this may not be without significance, and it is proposed to investigate the matter further when opportunity offers.

ANATOMICAL CHANGES.

In diseases which run a chronic course it is to be expected that definite gross tissue damage will result. In this respect scrapie presents a singular exception to the general rule, because, while the course is relatively protracted and the symptoms become progressively intense until a fatal termination is reached, apart from the emaciation and the presence of such injuries as may have been induced by the vigorous rubbing of the skin, no gross pathological change occurs in the disease. This view is shared by all investigators, and the writer has himself carried out numerous systematic post-mortem examinations with entirely negative results. It should, however, be recorded here that in each of five scrapie rams which Stockman examined there was found a catarrhal patch, purple in colour, on the mucous membrane of the urethra and extending some distance forward from the neck of the bladder. The possible significance of this lesion remains undetermined. Bertrand, Carré, and Lucam observed a lesion on the uterine mucous membrane consisting in one or more plaques approximately 1 cm. to 2 cm. in diameter, and brown or brownish-black in colour; the lesion was present in nine of ten scrapie ewes examined (90 per cent), while in one hundred and fifty presumably healthy ewes it was found in nineteen instances (about 12 per cent). The possible significance of this lesion is also undetermined.

MICROSCOPIC CHANGES.

So long ago as 1898 Besnoit and Morel described in scrapie certain changes in the medulla, spinal cord, large nerve trunks, and peripheral nerves; these changes included vacuolation of certain of the neurones (nerve cells) in the medulla and cord, and a degenerative inflammatory condition of the peripheral nerves. As a result of these findings Besnoit and Morel suggested that the disease be named "Névrite périphérique enzootique du mouton." Stockman (1926), while noting the presence of vacuolation in the neurones, failed to confirm Besnoit and Morel's observations upon the existence of a peripheral neuritis. Stockman also observed the presence of inclusion bodies in the neurones and in the cells of the spinal ganglia. These bodies in their staining reactions resembled the so-called Negri bodies found in rabies, but whether they bear any relationship to the cause of scrapie is doubtful.

Bertrand, Carré, and Lucam confirmed in general the observations of Besnoit and Morel and those of Stockman, but also failed to demonstrate a peripheral neuritis. They reached the conclusion that the histological changes represented a sub-acute polio-myel-encephalitis (inflammation of the grey matter of the brain and spinal cord).

For several years the histological changes which occur in scrapie have been systematically studied at Moredun Institute by Brownlee, and the results of the investigation, which form the subject of a separate paper, will shortly be published.

PHYSIOLOGICO-BIOCHEMICAL STUDIES.

A study of the biochemistry of scrapie indicated that an acute disturbance of the carbohydrate metabolism was frequently associated with the disease; it was therefore arranged to carry out a systematic study of the basal metabolic rate which obtains in scrapie. The work, which extended over one year, was undertaken at Moredun Institute by Professor H. Dryerre and Professor J. Yule Bogue; it showed that the metabolic rate remained relatively unaffected throughout the course of the disease.

POSSIBLE METHODS OF TRANSMISSION.

(1) *Hereditary Transmission.*—The term "scrapie ram" is used in reference to a ram which develops scrapie subsequent to his being used at stud in a clean flock, and also to one which has been bred in a flock in which the disease is present. It has been commonly observed that such rams may never show signs of the disease, or prolonged periods—in some cases several years—may elapse between the occurrence of symptoms of scrapie in the progeny and the subsequent manifestation of the disease in the ram. It is also recognised that scrapie frequently appears in the progeny of ewes which later showed evidence of the disease, although upon occasion it may also attack lambs, the mothers of which remained apparently free from and had no known connection with scrapie.

These facts, which have been long established, prompted the question whether scrapie arose not from a living infective agent, but from a diathesis or special liability to the disease which could be transmitted from the immediate, or even the more remote, parents to the progeny. This hypothesis seemed to be supported by a variety of evidence, including the apparent inability of a scrapie ram to transmit the disease venereally to his ewes, the consistent failure to demonstrate the presence of pathogenic micro-organisms, and also the repeated failure of several investigators to set up the disease experimentally by artificial inoculation of material derived from affected sheep. On the other hand, the present writer and others have observed that in the case of a flock which had recently become infected as the result of the introduction of a scrapie ram the disease in the course of time tended to spread and eventually became manifest among members of the flock which had no relationship to the ram concerned. Such observations, therefore, suggested that the cause of the disease was a living infective agent.

It has been already indicated that scrapie is relatively prevalent in certain breeds, and that others, notably the Scottish Blackfaces, are seldom affected with the natural disease. It may therefore be accepted, but only with considerable reserve, that some degree of breed diathesis to scrapie may exist. On the other hand, a close study of the breeding strains in a large pedigree flock which for several years had been affected with scrapie afforded no evidence that any particular strain was specially susceptible; indeed, the disease in this instance appeared quite erratically in different unrelated strains.

(2) *Venereal Infection.*—It has been frequently stated that scrapie can be transmitted venereally from the ram to the ewe. Stockman formed the conclusion that the disease was directly and/or indirectly contagious, and he believed it possible that scrapie might be transmitted to the ewe or ram by the sexual act.

In every case, however, of alleged venereal transmission which the writer has investigated, the evidence was such that it is permissible to doubt whether such supposed cases could not be explained on other grounds.

The following observations may be cited as indicative that the disease is not transmitted venereally, and numerous similar instances could be quoted.

(*a*) A shearling Half-Bred ram, soon after his introduction to a 'clean' flock, was mated with fifty ewes, and during the subsequent breeding season he served approximately the same number, but immediately after his second period at stud he developed typical scrapie. In consequence the progeny of the ram were fattened and sold to the butcher, and it was found that the disease was not transmitted to the ewes which he had served or to their subsequent progeny by other rams.

(*b*) A certain Border Leicester ram served about sixty ewes which were pastured in a park by themselves. The ram developed scrapie about six or seven months after completion of stud. When the progeny of this scrapie ram became gimmers the disease appeared in them in an incidence of about five or six per cent, but no case of scrapie occurred in the ewes.

While it would not be proper to assert that the disease is never transmitted venereally from ram to ewe, or conversely from ewe to ram, the writer still awaits proof that such transmission occurs and that despite careful and prolonged personal investigation of the conditions of occurrence of scrapie in the field.

(3) *Congenital Infection.*—Congenital infection implies that an animal while it is still unborn is infected with the living causal agent of a particular disease. It does not necessarily imply that the disease manifests itself at birth; indeed, a considerable period may elapse before its symptoms become evident. It therefore seemed probable that the numerous cases in which scrapie occurred in the progeny of affected parents could be referred to congenital infection. This, nevertheless, was not very easy of acceptance, since, while the congenital transmission of an infective agent can readily be understood in its conveyance from ewe to lamb, it is difficult *prima facie* to conceive how such infection can be conveyed from the ram through the ewe to the lamb, since, as has been indicated, one can find no solid evidence that the disease can be transmitted by direct venereal infection from ram to ewe.

From what has been stated there is reason to believe that the disease may exist in a ram for a prolonged period in a latent form and that during this period of latency the carrier animal may be capable of infecting his progeny in that his semen contains an infective agent. Since this implies that the ewes mated to such scrapie rams must also become infected, the fact that the disease seldom, if ever, manifests itself in them may be explained on the assumption that such ewes also harbour scrapie in a latent form; it is even possible, although we have no evidence to support this further assumption, that they may remain infective carriers. In this way, too, the fact that an apparently healthy ram may transmit the disease to his progeny may also be explained by a similar working hypothesis which was independently postulated by Stockman.

The factors which arouse the latent infection and convert it into an active disease condition with frank clinical manifestations are not known, but may be represented by those discussed under predisposing causes.

Our observations have already afforded evidence that the central nervous system of sheep in the pre-clinical stage of the disease is highly infective, and indeed it is conceivable that sheep harbouring the latent infection possess a higher degree of infectivity than those in which the disease is clinically manifest. The following experiment carried out at Moredun Institute under the direction of Mr W. A. Pool may be cited in respect of this latter statement.

Ten Cheviot ewes obtained from a 'clean' flock were mated in November and December 1928 to a ram then actually affected with the disease. The ram died shortly after serving the ewes, but they and their lambs were kept under observation for four years, at the end of which period no clinical evidence of scrapie had developed either in the ewes or in their progeny. The negative nature of this result appears to provide some evidence that scrapie is not transmitted venereally from ram to ewes or congenitally to their progeny, but in this case the ram employed was exhibiting clinical symptoms of scrapie, and it is conceivable that a ram in the pre-clinical stage of the disease might transmit infection much more readily than one in which the signs of the disease were manifest. It is, of course, recognised that the number of experimental sheep in this particular case was small, and that in consequence no definite inference can be drawn.

(4) *Immediate Contagion.*—So far we are yet without evidence that scrapie can be transmitted by immediate contact.

M'Fadyean carried out experiments in which eight healthy test sheep were placed in loose-boxes in immediate contact with cases of scrapie for periods varying from thirty-four to ninety-two days. The test animals were kept under observation for further periods of from eighteen months to three years eleven months. The result was entirely negative.

Bertrand, Carré, and Lucam mixed eight sheep (including four lambs) with an infected flock numbering approximately two hundred, in which the incidence of the disease was about ten per cent. The contact animals intermingled with the flock for a period of five months. Thereafter they were kept under observation for a further period of over two years. At the conclusion of the experiment none of the contacts had developed scrapie. These authors also quote Dammann (1869), who kept healthy sheep (number not stated) in immediate contact with scrapie for periods ranging from nine to twenty-two months with negative result.

While the results of these experiments are negative, it could be argued that they are not conclusive, since the number of the contact animals was relatively small and since, especially in the experiment of Bertrand *et al* and in that of Dammann, the period over which the observations were made should properly have been extended.

(5) *Infection through the Milk.*—M'Gowan had six lambs, the progeny of healthy ewes, suckled upon six scrapie ewes until these died or became too weak to nourish the lambs (a period of about one month), after which the lambs were reared on cow's milk. M'Gowan stated that "in due course" all these six lambs died from scrapie, while no case of the disease occurred in lambs born from and nursed on healthy mothers, which were closely intermingled with these experimental lambs during the whole course of the experiment.

Roche-Lubin had thirty healthy lambs suckled for one month on the same number of ewes affected with the disease. He states that the lambs all remained healthy.

The possibility that the disease can be transmitted from ewe to lamb through the medium of the milk must remain for the present undetermined.

(6) *Infection by Sarcosporidia.*—M'Gowan advanced the hypothesis that scrapie was due to a heavy infestation of the muscles by Sarcosporidia (*Sarcocystis tenella*).

This hypothesis is open to serious objection.

M'Gowan believed that this Sarcosporidiosis occurred in its greatest intensity in gimmers, and that the heavily infested dam could transmit the infestation to her lamb both by congenital infection and through the medium of her milk; he believed that scrapie was propagated by breeding from the progeny of gimmers ('gimmer-gimmer breeding'), and he sought to explain the enzootic character of the disease on the grounds that this method of breeding was practised within the scrapie enzootic area.

But, as is well known, *S. tenella* is ubiquitous and infests sheep throughout the entire world. The organism is, in fact, to be regarded as a commensal rather than a parasite in that its infestation is not known to produce any evidence of disease. It is also recognised that particularly heavy infestations by sarcosporidia are associated (as secondary infections) with chronic debilitating diseases other than scrapie. Further, it is a common practice in flocks in which scrapie is prevalent to breed from the ewes of all ages, while 'gimmer-gimmer breeding' is practised in flocks which remain free from the disease.

(7) *Pasture Infection.*—For a number of years there had been brought to the writer's notice several instances which suggested the possibility that scrapie could be transmitted from diseased to healthy sheep through the medium of the pasture. It was found, however, to be a matter of extreme difficulty to obtain evidence in the field that the disease was thus transmitted, since there so frequently existed the possibility that transmission had occurred by other means, such as congenital infection or immediate contact. However, there were observed instances of which the following may be cited as an example that strongly indicated the probability of pasture infection.

For three consecutive years Farm G, on which scrapie was prevalent, obtained Cheviot ewe lambs from Farm F, which was known to be free from the disease. There was no evidence that any of these animals had been in immediate contact either with a scrapie ram or with the general sheep stock on Farm G, yet, when the lambs of each year's purchase became two years old, numerous cases of scrapie appeared in them, but their fellows on Farm F remained unaffected. It seemed, therefore, that it might reasonably be deduced that an exciting pathogenic factor was in operation on Farm G but not on Farm F.

In view of this and a number of similar observations, one was led to the tentative conclusions (*a*) that the disease was due to a factor capable of mediate transmission, (*b*) that this factor was present on some farms and was absent on others, and (*c*) that it probably represented a living infective agent. Similar views had been reached by other workers, notably M'Fadyean and Stockman.

In 1932 there was observed an occurrence which appeared to afford evidence confirmatory of this view. On a certain farm there had been maintained for sixty-seven years a valuable flock of pedigreed Border Leicesters. This flock had been entirely free from scrapie until 1928, in which year the disease made its first appearance. On the farm there was a ten-acre paddock in which no case of scrapie had been known to occur, but in 1930 a ewe clinically affected with the disease was confined in the paddock until she eventually died, a period of approximately five weeks. Several months later two rams (A and B) were kept in the paddock for about one month, and thereafter no sheep had access to it until thirteen months later, when three others rams (C, D, and E) were confined there for about four weeks.

Each of these five rams developed scrapie approximately eleven months after their having been first introduced to the paddock. Although a close inquiry revealed the facts that in the case of rams A and B there was reason to believe that scrapie existed in the flocks from which they had been purchased, and that in the case of ram C the animal had been used for service on a pasture during a period in which a case of scrapie had occurred there in a ewe, there was definite evidence that the remaining rams D and E, which were home bred, had never previously been in direct or indirect contact with the disease. In view of these circumstances, and especially since all five rams developed clinical symptoms of the disease after, in each case, the expiry of a period of eleven months, it appeared that possibly in all five cases, and very probably in at least two of these (rams D and E), the disease could be attributed to infection from the pasture. The disease, in the case of each ram, manifested itself during the breeding season, and this may have been the cause of the apparently short incubation period, since, as has been previously stated, the sexual crises, with good reason, may be presumed to precipitate the clinical manifestation of scrapie.

In consideration of these and other similar kinds of data, it was therefore resolved to attempt to determine by means of the experimental method whether scrapie could, in fact, be transmitted through the medium of the pasture. Accordingly in November 1932 the writer arranged to form at Moredun Institute a double-fenced enclosure, approximately one-half acre in extent, in which all cases of scrapie admitted to the Institute were confined. On the 11th November there were purchased twenty Half-Bred gimmers and six pregnant Cheviot ewes from farms situated in districts of Scotland in which scrapie had not been known to occur. These sheep were placed in a field immediately adjoining the scrapie enclosure, and thereafter approximately twice each week they were brought into the enclosure, while the scrapie sheep were turned out into the field occupied by the contact animals, care being taken that during the process of interchange the two lots of sheep did not come into immediate contact with each other. The ewes were served in November 1933 by a Cheviot ram lamb (born at Moredun on the 18th April 1933), the progeny of one of the Cheviot ewes, and they were again served by this ram in November 1934. There was, incidentally, a heavy death-rate in the lambs of both these lambings.

Throughout the course of the experiment a few—usually three or four—cases of scrapie were maintained on the experimental pasture.

At the conclusion of the period of experiment and observation at Moredun (16th November 1935) no case of scrapie had been observed among the contact sheep, and these were then transferred for further observation to a farm in Midlothian (Farm M.) on which scrapie had not been known to occur.

The flock then comprised sixteen ewes (twelve Half-Breds and four Cheviots) and nine ewe hoggs—twenty-five in all; eight Half-Bred ewes and two Cheviot ewes having died during the course of the experiment from causes unconnected with scrapie, while the wether lambs had been disposed of.

Soon after arrival at Farm M. three hoggs died in a condition of debility, the precise cause of which remained undetermined, but no case of scrapie was observed in any of the contact sheep until February 1936, a period of approximately three years and three months after the commencement of the experiment.

Between February 1936 and May 1938, when the experiment was concluded, nine other contact ewes, representing both the Half-Bred and the Cheviot flocks, developed scrapie. In three of the ten cases the diagnosis was not precisely determined, but the remaining seven were typical cases of the disease, and it was concluded that the investigation afforded very strong experimental evidence indicating that scrapie was an infective disease, the causal agent of which could be transmitted through the medium of pasture.

It was at one time believed by flockmasters that mediate contagion through the pasture did not occur, since in practice it had been found that the disease could be eliminated from a farm by selling off the whole flock and shortly thereafter replacing it with healthy stock. The period during which pastures remain infective is, however, unknown; it may be of short duration. It is also true that in a considerable number of instances the procedure of complete restocking has failed to eradicate the disease in so far that although it has resulted in a marked reduction in the incidence of scrapie the disease has in due course reappeared and progressively increased in incidence. This is especially so in the case of lowland farms on which the pasture is relatively intensively grazed as distinct from sparsely stocked hill farms on which the chance of contracting infection from the pasture would be much reduced.

(8) *Transmission by Artificial Inoculation.*—Several investigators have endeavoured to transmit the disease to experimental sheep by the inoculation of various material derived from affected animals.

Dammann inoculated blood and nasal discharge, Besnoit used as his inocula blood and cerebral and medullary substance, while M'Fadyean inoculated intravenously and subcutaneously fourteen sheep with blood, cerebro-spinal fluid, preparations of skin, and also material derived from the allantois and from the fœtal cotyledons. In his cases the animals were kept under observation for periods varying from approximately two years to two years six months after inoculation. In all these experiments the results were negative.

Another series of experiments in which preparations of the male sexual organs were used as inocula was carried out at Moredun Institute under the direction of Mr W. A. Pool.

The following organs—testis, epididymis, vas-deferens, accessory sex glands and urethra—from a ram which had died in an advanced stage of the disease were obtained within a few hours after the animal's death.

A portion of each organ was prepared as a heavy suspension in normal saline solution, and 5 c.c. of each preparation was introduced directly into the pregnant uterus of six ewes by the flank operation.

A similar volume of the suspension was injected into the uterus *per vaginam* in eight pregnant ewes. Three of these ewes received accessory sex glands, two received testis, and the three others were injected with a preparation of epididymis, vas-deferens, and urethra respectively.

The sheep and their progeny were kept under observation for four years nine months, and in no case were symptoms of scrapie observed.

As distinct from the foregoing experiments those of Cuillé and Chelle (1936) have furnished evidence that scrapie can be artificially transmitted by inoculation. These workers, using inocula derived from the cerebrum, medulla, and spinal cord of several sheep in the later stages of scrapie, inoculated seventeen healthy sheep by the intra-cerebral, epidural, intra-ocular, subcutaneous, and intra-cutaneous routes. Of these seventeen experimental sheep nine died from intercurrent affections, but of the remaining eight animals two which received a preparation of spinal cord by intra-ocular inoculation developed symptoms of scrapie fourteen and a half and twenty-two months after inoculation; one sheep which received an emulsion of medulla epidurally and one which received this inoculum subcutaneously developed scrapie after intervals of one year and of nineteen and a half months respectively; one other sheep which received an intra-cerebral inoculation of spinal cord developed scrapie eleven months after inoculation, while the three remaining experimental sheep continued in apparent health. It would thus appear that out of seventeen experimental animals the positive transmission of scrapie had been effected in five cases.

In a further series of experiments two healthy lambs each received, partly by intra-ocular and partly by subcutaneous injection, a filtered emulsion (Chamberland L. 3) of scrapie spinal cord. Both these lambs developed typical symptoms of scrapie sixteen months later.

It would appear, therefore, that the work of Cuillé and Chelle furnishes further experimental evidence that scrapie is an infective disease and that it can be transmitted artificially by inoculation. It also indicates (although confirmation of this is yet lacking) that the causal agent of the disease is capable of passing a comparatively fine porcelain filter, and that it therefore probably represents a filtrable virus.

Bertrand, Carré, and Lucam, with the object of testing the results obtained by Cuillé and Chelle, inoculated twelve sheep—nine by intra-cerebral injection, two subcutaneously, and one by skin scarification—with suspension preparations of the brain and spinal cord obtained from sheep showing typical symptoms of scrapie. The results were uniformly negative, but with the exception of one ewe—inoculated intra-cerebrally—which was kept under observation for twenty-three months, none of the other experimental animals was observed for a period longer than three and a half months.

Recent observations by the Animal Diseases Research Association indicate that a very considerable number of sheep inoculated with virulent scrapie material remain refractory to the development of the disease, and in consideration of the very small numbers of experimental sheep employed by Bertrand, Carré and Lucam, and the quite inadequate periods during which they were kept under observation, it is considered that these experiments should properly be regarded as being without significance.

In 1937 the Animal Diseases Research Association, as the result of field observations involving several thousand sheep, became possessed of evidence indicating (*a*) that the infective agent of scrapie is present in the brain, spinal cord, and/or spleen, (*b*) that it can withstand a concentration of formalin of at least 0·35 per cent, (*c*) that it can be transmitted by subcutaneous inoculation, and (*d*) that the incubative period of the infection may extend to at least two years.

In view of this knowledge the Association in 1938 purchased a healthy—that is, a non-scrapie—hirsel comprising over five hundred sheep, and these are being maintained as an experimental flock for the purpose of carrying out a systematic study of the disease and of determining the nature of the causal agent. Because of the prolonged incubative period of scrapie it follows that the investigations must necessarily cover a period of several years; the results will be published in due course.

In preparing this paper the writer has endeavoured to collate and to present in somewhat concise form such knowledge of scrapie as is now available.

It would appear that scrapie represents a neurosis characterised by symptoms of intense and progressive pruritus or itch, progressive debility, and locomotor inco-ordination. The course, which may extend over several months, almost invariably terminates fatally.

There is now evidence that the disease is due to a living infective agent the nature of which is not yet precisely determined.

The incubative period of the disease is prolonged and is frequently of two years' duration.

The evidence indicates that under natural conditions the disease may be transmitted by means of congenital infection and through the medium of infected pasture. It may also be transmitted by artificial inoculation.

There is now evidence such as to permit the belief that many sheep which become infected with scrapie do not show any obvious sign of the disease; such sheep if used for breeding may, nevertheless, transmit the infection to their progeny, in which it may or may not become manifest. This remarkable feature of scrapie—*i.e.*, the propensity of the disease to remain latent, yet still infective, through one or more generations, and also the fact that in any individual animal a prolonged period elapses between actual infection and disease manifestation, have been among the chief reasons why our study of scrapie has so long been beset with conflicting evidence, the meaning of which was so often obscure.

The investigation upon which the Animal Diseases Research Association is now engaged has as its ultimate objects the control and the elimination of the disease. These objects may be achieved either by the discovery of a method of diagnosing, by laboratory or other test, the presence of latent scrapie infection and/or the development of an effective method of preventive vaccination.

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INSECT AND OTHER PESTS OF 1939.

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GRASS-LAND PESTS OF CULTIVATED CROPS.

MANY of the common agricultural crop pests are ones which have been derived from grass land. Even under arable conditions there are some which still continue to choose leys and pastures in which to breed, and it is only when grass is succeeded by a cultivated crop that their destructive activities are realised. Among the more common pests that arable farming has inherited from grass land there may be mentioned Wireworms, Leather Jackets, Frit Fly, Cutworms or Surface Caterpillars, Slugs, and Snails. With the exception of Wireworms, these pests complete their development in the year subsequent to that in which the eggs are laid, so that their capacity for damaging crops following grass is usually limited to the first year. Reinfestation may, of course, occur where, even with changes of crops, the conditions remain suitable for repetition of breeding. As a rule, however, the rotational system of farming presents an effective check to pests, since there are few which feed indiscriminately on all and sundry crops. Wireworms are peculiar in that they require more than one year to complete their development, and during this time they will feed on practically any crop that may occupy the infested ground.

WIREWORMS.

Until the outbreak of war the tendency in farming had been to reduce the acreage under cultivation and increase that under grass. This policy has now been reversed, and, as a contribution to the national effort for increased food production at home, Scottish farmers have been asked to bring under the plough 260,000 additional acres for the harvest of 1940. With such a radical change of agricultural practice pest problems will be bound to occur, and the farmer should be prepared to meet them as they arise with all means at his disposal. In recent years effective methods of coping with Leather Jackets and Slugs[1] by the application of poison baits to infested ground have been discovered, but, unfortunately, the same cannot be said for Wireworms. Whilst recent research has served to extend our knowledge of their habits, it has to be admitted that there has not yet materialised a direct method of controlling their destructive activities which is at once economical and effective. In recent years, both in America and Britain, experiments with baits for attracting and assembling Wireworms previous to their destruction by the application of soil fumigants have been carried out, but inconsistency of results, combined with the high cost of treatment, renders the adoption of the method impractical, except perhaps under the intensive system of cropping in market gardening.

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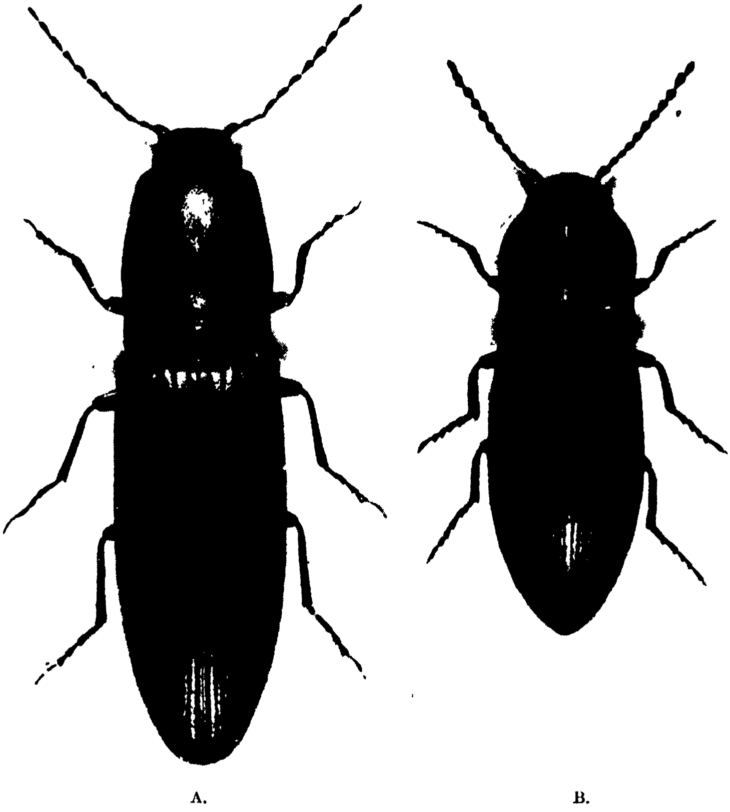

Fig. 3.—*Two common Click Beetles of grass land and cultivated land.* A, Athous hæmorrhoidalis ; B, Agriotes obscurus. × 6.

From nature.

Among insect pests Wireworms are notable because of the prolongation of the period of their development. Altogether they spend about five years in the soil before transforming to the adult Click Beetle, which returns to grass land or weedy fallow to lay its eggs. Thus infestation of cultivated ground by Wireworms is not attributable to causes immediately connected with the current year's crop, but harks back to the time when the ground was covered by grass. As one crop succeeds another in the rotation a progressive annual diminution occurs in the density of the wireworm population. This is explained by the fact that the wireworm population of the original grass land is composed of individuals of all ages from less than one up to five years, and each year a certain percentage completes its development and departs as beetles. Nevertheless, the normal density of a wireworm population is such that an infested crop may suffer severe damage any time up to three years after grass land has been broken. With a few exceptions crops of all kinds are liable to attack, and the degree of damage varies roughly with the density of the wireworm population, when it exceeds 200,000 per acre, or about forty per square yard, which is considered by Roebuck [1] as the threshold of safety. By the use of a refined technique in sampling infested soils, whereby contained insects are floated to the surface of a solution of 25 per cent magnesium sulphate, Ladell [2] obtained counts of as many as two to three million Wireworms per acre in patches throughout a field. To make an estimate of the wireworm population of a field, samples of soil six inches square and five to six inches deep are selected at random and carefully examined for Wireworms. Because of the lack of uniformity in their distribution the number of Wireworms per sample varies greatly, and thus the accuracy of the estimate will depend on the number of samples of soil examined.

Life-history.—Thanks to the researches of Rymer Roberts [3] the life-cycle of the species of Wireworms of arable crops is fairly well known. As farmers are aware, Wireworms are the larvæ of Click Beetles, which are brown or blackish insects (Fig. 3). Because of their shy retiring habits the beetles are not so commonly encountered as are their larvæ, which are often brought to the surface in numbers when infested land is ploughed or otherwise cultivated. The female beetle lays her eggs just beneath the surface of the soil, and in three or four weeks there hatch minute whitish Wireworms, which grow slowly and gradually assume the yellow-brown, glossy appearance that distinguishes the full-grown larva (Fig. 4). The latter is ¾ in. long, thin and cylindrical, with a pair of strong jaws and three pairs of short legs just behind the head. During the five years of their underground existence they moult eight or nine times at the rate of twice a year, in spring and autumn. For two periods each year, when they feed actively, first from March to May and again in September-October, Wireworms are abundant in the root zone near the surface. At other times they are more sparsely represented at the surface than they are at deeper levels up to 8 to 10 inches. When they have completed their growth in late summer Wireworms burrow to a depth of 6 to 8 inches, and make for themselves a small cavity in the soil, in which they change to a pupa. About a month later the pupa turns into the Click Beetle, which, however, remains dormant below ground until May of the following year.

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[1] Roebuck, A., 1924. "Destruction of Wireworms." Jour. Min. Agric., Vol. XXX., pp. 1047-1051.

[2] Ladell, W. R. S., 1938. "Field Experiments on the Control of Wireworms." Ann. App. Biol., Vol. XXV., No. 2, pp. 341-389.

[3] Rymer Roberts, A. W., 1920-1928. "On the Life History of Wireworms of the Genus *Agriotes*, Esch. With some notes on that of *Athous hæmorrhoidalis* F." Parts I.-IV. Ann. App. Biol., Vols. VI., VIII., IX., XV.

Wireworm Damage.—So far as arable crops are concerned Wireworms are practically omnivorous, but some crops appear to be more susceptible to attack than others. Among those that are specially prone to injury are wheat, oats, barley, and potatoes. Cereal crops suffer greatest damage in spring and early summer when the plants are young and the wireworm population is actively feeding near the surface. The first sign of attack is the appearance of gaps in the rows, where one plant after another has been destroyed by itinerant Wireworms which bite through the underground stem of one plant before proceeding to the next.

In potatoes Wireworms may not only riddle the setts, but also disfigure the tubers with deep pits that render them unmarketable. In some recent experiments at Warburton, Cheshire, Miles and Cohen[1] showed that about 25 to 55 per cent of the tubers of twelve varieties from first and second earlies and maincrops, in equal numbers of four each, were damaged by Wireworms. In each of the three groups, Sharpe's Express, Great Scot and Arran Banner were respectively least injured, whilst Ninety-fold, Catriona and Majestic, in the corresponding groups, were badly damaged. Further trials may serve either to corroborate or controvert the results, which were based on trials too small to be significant.

Among root crops swedes and turnips are considered to be fairly safe so far as wireworm injury is concerned, provided they escape the spring attack. Autumn attack is likely to result in nothing more serious than a slight loss in yield. According to Petherbridge[1] sugar-beet following grass is considerably damaged by Wireworms, but where the beets are intersown with wheat the damage is materially reduced.

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[1] Miles, H. W., and Cohen, M., 1938. "Investigations on Wireworms and their Control." Jour. Roy. Lancs. Agric. Soc., repr., 31 pp.

Of crops that are partly resistant to wireworm attack there are field beans and peas. Rye is less susceptible than wheat or oats, and of the Brassicas marrow-stem kale and rape, because of their strong growth, are rarely troubled. Linseed and mustard are practically immune.

Wireworm Control.—In controlling the Wireworms of field crops after grass land there are certain considerations which require careful attention. The most important of these are time of ploughing, type of cultivation, choice of crop, time of sowing relative to wireworm activity, and system of manuring. These various questions have been recently discussed by Miles,[2] and are also emphasised in a leaflet[3] published by the Ministry of Agriculture and Fisheries, and will be briefly reviewed here.

1. *Time of Ploughing.*—After a pasture or ley has been broken, Wireworms continue to subsist on the buried turf, and it is only after the turf has decayed that they turn their attention to the crop. Damage to the crop, therefore, will depend on the rate of decay of the turf, which will vary according to the kind of turf and composition of the soil. Thus a crop sown in autumn on land broken from grass the previous summer will probably be attacked in the spring, whilst one that is sown in spring after the land has been ploughed in late winter or early spring will probably escape, and it will then be the second crop of the rotation which will suffer. But the time of ploughing is not only important in regard to the later onset of wireworm attack; it has also a direct bearing on the mass of the wireworm population. Thus ploughing grass land in spring and autumn exposes the Wireworms, which are then at the surface in greater numbers than at other seasons, to the attack of insectivorous birds. It is well to remember, too, that late summer is the season when eggs, newly hatched larvæ, and the inert, delicate pupæ are to be found, and these are all susceptible to the disturbance of the soil by tillage operations.

2. *Cultivation.*—For the control of both pests and diseases authorities are agreed that grass land should be deeply ploughed with the furrow slice completely inverted and the sod buried to a depth of eight inches or more. Experience, too, has

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[1] Petherbridge, F. R., 1938. "Wireworms and Sugar-Beet." Jour. Min. Agric., Vol. XLV., pp. 23-27.

[2] Miles, H. W., 1939. "Wireworms and the Breaking-up of Grassland." Agriculture, Vol. XLVI., pp. 480-488.

[3] "Growmore" Leaflet, No. 11, 1939. Ministry of Agriculture and Fisheries.

shown that thorough consolidation of the land reduces the risks of pest attack on the crop by providing a deep, firm seed-bed which encourages vigorous growth and tillering of cereals. Rolling and cultivation of the young crop will later serve the same end and enable it to become well established before wireworm attack begins. Not only does the proper preparation and cultivation of the soil assist the crop to resist attack, but the practice of intensive cultivation over a series of years was shown by Roebuck [1] to reduce the period of tenancy of ploughed land by Wireworms from five to three years. The infested ground was either continuously cropped by hoed crops or frequently cultivated in the brief intervals between successive crops.

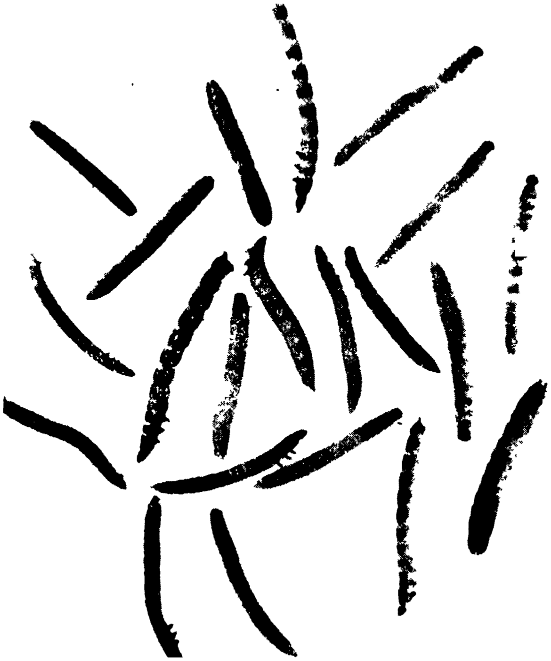

Fig. 4.—*Wireworms, the larvæ of Click Beetles.*

From nature. Slightly enlarged.

3. *Choice of Crop.*—In normal times the farmer may select one of several more or less resistant crops, such as peas,

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[1] Roebuck, A., 1924. "Destruction of Wireworms." Jour. Min. Agric., Vol. XXX., pp. 1047-1051.

beans, mustard, rape and flax, for sowing on wireworm-infested land. At the present time, however, the national interest must outweigh all other considerations, and his choice will be restricted to more valuable, but less resistant food crops, such as wheat, oats, and potatoes. Even if they should fail as a result of severe wireworm infestation, part of the loss at least may be redeemed by resowing the land with roots or kale, which will thus escape the spring period of wireworm activity. As a matter of experience anxiety in regard to the success of winter wheat on infested ground is often unwarranted, because its strong tillering capacity enables it to resist heavy attacks, especially when the soil is rich and well consolidated. In districts where the Wheat Bulb Fly is troublesome, following grass with winter wheat will be all to the advantage of the crop. The fly, which is active from July to September, selects for the laying of its eggs the soil of a bare fallow or that which has been imperfectly covered by the foliage of a root or potato crop. Wheat sown under such conditions is often badly hit by the maggots of the fly, which hatch from the eggs in February and feed on the plants until May. Thus where the Wheat Bulb Fly as well as the Wireworm has to be considered, it would be well to take potatoes after wheat in the second year after grass.

Even when all known precautions have been taken, thin patches due to wireworm attack may still appear in the wheat crop in spring. It has been suggested by Miles that these patches should receive a light dressing of nitrate of soda and then be sown with spring wheat or oats.

On no account should winter wheat be sown after a rye-grass ley, unless the field has been ploughed before harvest. Rye-grass harbours the maggots of the destructive Frit Fly, which migrate to the young wheat from the turned-in sod. Rye-grass leys become infested at the time of the corn harvest when the Frit Flies, which have bred on the flowers and grain of oats, fly over to the rye-grass and lay their eggs.

A considerable part of the newly ploughed grass land in Scotland will be given over to spring oats. Following grass this crop does best when it is sown in fields ploughed early in the year, so that there is still plenty of turf to serve as food for Wireworms when the young plants are in the process of establishing themselves. In districts where the Frit Fly is abundant it is well to sow oats early in order to give the young plants a chance to arrive at the resistant four-leaved stage before the flies appear in May to lay their eggs on the leaves. To encourage rapid early growth so that the plant may reach the four-leaved stage before the middle of May a light dressing of nitrate of soda should be applied to the new crop, along with sufficient phosphatic manure to obviate the risk of lodging.

Despite the fact that potatoes are susceptible to wireworm attack the seed is rarely so damaged as to affect the luxuriant growth of the tops. Damage occurs when the Wireworms migrate to the tubers in late summer and autumn and riddle them with holes. Although potatoes do well as a second crop on old ploughed grass land, where they are favoured by the decaying mat of old turf, they are thereby liable to heavy attack by Wireworms to which the turf is no longer so attractive as it was the first year. Thus in order to reduce the risk of heavy damage to the crop in infested land it might be well to take potatoes as a first crop. This procedure is particularly advisable when the land is broken too late in the year for sowing to winter wheat or other winter crops. Potatoes, again, are also a suitable crop on land ploughed in late winter or early spring and may be considered as an alternative to oats, barley, or sugar-beet.

Remedial Measures.—At the present time there is a pressing need for a quick-acting and cheap soil insecticide for use against Wireworms and other destructive soil-inhabiting insect and allied pests. Dressings of crude naphthalene at the rate of 3 to 5 cwts. per acre are frequently recommended, but the results attending its application are very variable, depending on the texture of the soil and weather conditions. The vapour of naphthalene, too, has primarily a repellent effect on insects, which causes them to withdraw out of range before it has reached a toxic concentration. From recent experiments Miles and Cohen [1] have concluded that dressings of 3 cwt. per acre do not destroy Wireworms, but merely afford some relief by repelling the insects from the crop for a short period.

Better results have attended the use of calcium cyanide as a soil fumigant. Horsfall [2] in America was the first to test its lethal effects upon Wireworms, and he claimed that it destroyed 81 per cent of the wireworm population of an infested field in five days. By combining baits to induce localisation of Wireworms, along with later dressings of calcium cyanide applied to the areas where the insects had gathered, Campbell [3] introduced a method whereby the cost of treatment could be materially reduced.

A further important contribution to the subject of wireworm control was that of Spuler,[4] another American worker, who showed that germinating seeds of peas, beans, and corn are more attractive than other baits such as bran, flour, sliced tubers. Seed is easily sown in rows, and when it has sprouted the seedlings serve to denote the places of assembly of the Wireworms. Two weeks after the seed has been sown the rows are fumigated with calcium cyanide. Whilst the measure of control achieved by fumigation was as high as 75 to 80 per cent, the cost of £6 to £9 per acre was likewise high where the cyanide was applied at the rate of 200 to 400 lb. per acre.

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[1] Miles, H. W., and Cohen, M., 1939. "Investigations on Wireworms and their Control." Jour. Roy. Lancs. Agric. Soc., repr., p. 13.

[2] Horsfall, J. L., 1924. "Possibilities of Granular Calcium Cyanide as a Control Measure for Wireworms." Jour. Econ. Ent., Vol. XVII., p. 160.

[3] Campbell, R. E., 1924. "Preliminary Report on the Use of Calcium Cyanide as a Soil Fumigant for Wireworms." Jour. Econ. Ent., Vol. XVII., p. 562.

[4] Spuler, A., 1925. "Baiting Wireworms." Jour. Econ. Ent., Vol. XVIII., pp. 703-707.

In Britain Miles and Petherbridge,[1] following the lead of previous American investigators, were able to confirm the fact that germinating seeds were more attractive to Wireworms than dead baits. Both wheat and oats proved suitable. Wheat was drilled in rows three feet apart. Calcium cyanide was applied to the bait-rows after two weeks at the rate of 90 lb. per acre, and the cost, with cyanide at 1s. 2d. per lb., was £4, 10s. per acre. In 1938 Petherbridge [2] exploited the differential attraction of wheat and sugar-beet for the protection of the latter against wireworm attack. The sugar-beet was intersown with wheat to which the Wireworms gathered in preference to the beet seedlings. The whole question of soil fumigants and wireworm control has been recently studied by Miles and Cohen.[3] Various fumigants have been tested both in laboratory and field experiments. Applications of mixtures of (1) mustard dross and naphthalene, (2) fuller's earth, naphthalene, and carbon bisulphide, and (3) fuller's earth, naphthalene, and cyanide were said to reduce the amount of serious wireworm damage to tubers. The results obtained by the authors are suggestive, but further experimentation will be required before these mixtures could be recommended for adoption in wireworm control. The question of cost, too, would require to be closely considered. Experiments with a variety of fumigants have also been carried out by Ladell [4] at Rothamsted, who found that mixtures of orthodichlorobenzene and paradichlorobenzene reduced the wireworm population of selected plots by 69 and 62 per cent, and crude naphthalene by 60 per cent. There was no means of determining how much the reduction of the wireworm population by any particular treatment was due to repellent action and how much to lethal effects. It was, however, realised by Ladell that the reductions of the wireworm population which he obtained were too low to be of significant economic value.

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[1] Miles, H. W., and Petherbridge, F. R., 1927. "Investigations on the Control of Wireworms." Ann. App. Biol., Vol. XIV., pp. 359-386.

[2] Petherbridge, F. R., 1938. "Wireworms and Sugar-Beet." Jour. Min. Agric., Vol. XLV., No. 1, pp. 23-27.

[3] Miles, H. W., and Cohen, M., 1939. "Investigations on Wireworms and their Control." Jour. Roy. Lancs. Agric. Soc., repr., pp. 1-35.

[4] Ladell, W. R. S., 1938. "Field Experiments on the Control of Wireworms." Ann. App. Biol., Vol. XXV., No. 2, pp. 341-389.

LEATHER JACKETS.

The Leather Jacket is another important pest that is destructive to crops, particularly cereals, which follow the breaking of grass land. So well known is this insect[1] that there is scarcely a farmer but has had some experience of its activities. In point of economic importance, the 'Grub,' or Leather Jacket, does not fall far short of the Wireworm, and like the latter attacks a wide range of plants. Unlike the Wireworm, however, which, we have seen, requires four or five years to complete its development, the Leather Jacket requires only one. Thus the Leather Jacket is destructive only for one year to crops following grass, and cultivated crops of subsequent years are untroubled until the land is laid down to grass once more.

From the fact that the population of Leather Jackets is greatly determined by the kind of weather conditions in autumn, it is possible to forecast outbreaks of the pest. Wet weather in autumn is favourable to the Leather Jacket, with the result that it may be expected to be injurious the following spring. Rarely does an outbreak follow upon a dry autumn.

Life-history.—The Leather Jacket develops from an egg laid by a Crane Fly, or Daddy Long Legs, an insect familiar to all. The two common grass-land Crane Flies are characterised by their dull greyish-brown colour, slender elongated bodies, ¾ to 1 inch long, narrow parchment-like wings, and abnormally long legs, from which the flies earn their popular names. They are on the wing from the beginning of August till the end of September, and the period of their greatest numbers extends from 1st to 6th September. According to Barnes[2] the males live for one to fourteen days and the females up to ten days. The average number of eggs laid by each female is said to lie between 250 and 350, with a maximum of 487 and a minimum of 48.

Pairing occurs soon after the flies are born, and, according to Lovibond,[3] the female lays practically her whole quota of eggs on the first day of her existence. The eggs are deposited at random on grass land when the Crane Fly is in flight over, or at rest among, the herbage, and they appear to be ejected with some force. Alternatively the female may bore a hole in the ground with its rigid ovipositor and deposit the eggs beneath the surface. Females of *T. paludosa* that were kept by Lovibond [1] in glass tubes were found to deposit their eggs in clumps, while *T. oleracea* deposited only one or two at a time. On Scottish hill-farms Crane Flies are very abundant, and some idea of the degree of infestation of a Selkirkshire pasture was obtained from the egg counts of soil samples 9″ × 9″ × 6″ extracted by the Ladell apparatus.[2] This extraction, which was done in the winter months, had for its object an entirely different aim—namely, the discovery of hibernating individuals of the Sheep Tick. Incidentally, each sample examined yielded, among other soil insects, eggs of Crane Flies which varied in amount from 10 to 100, with an average of about 40, which is the equivalent of an egg population of about 3 millions per acre. As our examinations were made during the winter, only empty egg-shells were found, together with a few that had failed to hatch (Fig. 5).

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[1] Actually there are several different kinds of injurious Leather Jackets. *Tipula paludosa* and *T. oleracea* are the most common.

[2] Barnes, H. F., 1937. "Methods of Investigating the Bionomics of the Common Crane-Fly, *Tipula paludosa* Meigen, together with Some Results." Ann. App. Biol., Vol. XXIV., No. 2, pp. 356-368.

[3] Lovibond, B., 1937. "Investigations on the Control of Leather Jackets. (2) Notes on Craneflies and their Larvæ." Jour. Bd. Greenkeeping Res., Vol. V., No. 11, p. 12.

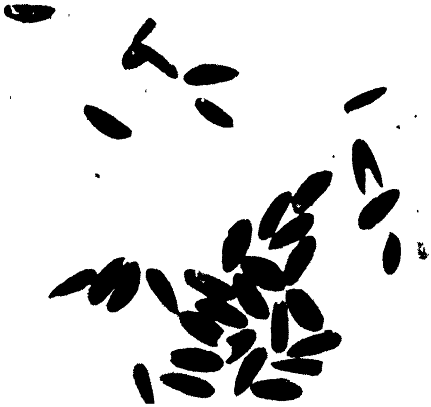

Fig. 5.—*Hatched eggs of the Crane Fly,* Tipula paludosa, *recovered from grass land.* × 6.

From nature.

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[1] Lovibond, B., 1938. "Investigations on the Control of Leather Jackets. (3) Some Results of Breeding and Sampling Experiments during the Current Season." Jour. Bd. Greenkeeping Res., Vol. V., No. 17, p. 107.

[2] Ladell, W. R. S., 1936. "A new Apparatus for separating Insects and other Arthropods from the Soil." Ann. App. Biol., Vol. XXIII., p. 862

The eggs, which resemble minute seeds, are $\frac{1}{25}$ in. long, oval, shiny black, with one end slightly rounded, the other conical. The period of incubation is about fourteen days, and the majority of the grubs hatch about the middle of September. The newly hatched grubs differ from those of later stages in the absence of four pairs of fleshy conical projections at the hind-end of the body. Instead, there are two tufts of bristles. Although the Leather Jacket is such a common insect it is interesting to learn that the number of its moults and the duration of its various larval stages have not been definitely decided. All that can be said is that there are at least three stages.

The grubs continue in the larval stage from September to July, so that there is but a single generation of Crane Flies per annum. The newly hatched grubs burrow down to the roots of plants, on which they feed until they enter upon hibernation. It is these young grubs which are so susceptible to injury as a result of exposure to drought and sunlight, and this is the reason why an abnormally dry autumn is usually followed by a year in which damage due to the Leather Jacket is relatively slight. Incidentally, drought has a lethal effect on the early stages of other soil pests such as Wireworms, Surface Caterpillars, and Slugs. Full-grown grubs (Fig. 6) are about 1¼ inches long, with a wrinkled, tough, leathery skin. In July or August the grub moults for the last time and changes to a chrysalis which lies erect in the ground with its front end projecting slightly above the surface. After ten to fourteen days the Crane Fly pulls itself free of the chrysalis skin and is almost immediately ready to take wing. Pairing occurs shortly after the flies emerge, and egg-laying begins and is practically completed on the first day of their winged existence. In this regard it is interesting to note that Crane Flies which are captured at light-traps are mostly individuals which have completed egg-laying. Lovibond (*loc. cit.*), from an examination of Crane Flies taken at a light-trap exposed at Rothamsted over a period of four years, found that 95 per cent of the eggs had been laid before the flies were caught. This, combined with the fact that only 23 per cent of the common *T. paludosa* were females, rather indicates that light-traps would be quite ineffective in coping with crane-fly infestations.

Symptoms and Damage.—In pastures and cornfields infested with Leather Jackets bare patches appear in spring where the plants have been attacked and destroyed. The grubs feed just below the surface of the soil on roots and underground stems, but on warm damp nights they are attracted to the surface to feed, when they sever the plants at soil level just as Cutworms do.

Control on Arable Land.—(1) The most effective remedy for Leather Jackets on arable land is the application of a poison bait, the same as that which is used in eradicating Surface Caterpillars. It is made by mixing together on a concrete floor 25 lb. of bran and 1 lb. of Paris green. Sufficient water is then added, a little at a time, to make the whole mass damp but not sodden. All the time it is thoroughly stirred with a stout stick to ensure that the ingredients are uniformly mixed. The bait is broadcast by hand in the late afternoon or evening at the rate of 25 lb. per acre. In that Paris green is a deadly poison it is enjoined that the bait should be used with all due precautions.

(2) We have seen that egg-laying of Crane Flies occurs in August in leys and pastures. Therefore grass land that is marked for cropping should be ploughed in July and the sod turned completely over. The land should be well consolidated after ploughing and a good tilth produced so as to give the crops a good start and enable them the better to withstand attack.

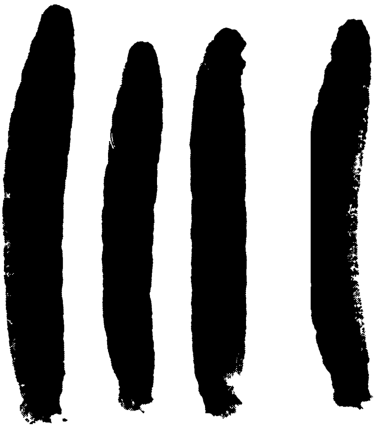

Fig. 6.—*Leather Jackets, larvæ of* Tipula paludosa.

From nature. Slightly enlarged.

Natural Enemies.—It is well known that Leather Jackets form a substantial part of the dietary of lapwings, rooks, starlings, pheasants, and gulls in spring and early summer, when the insects are brought to the surface in the course of cultivation. Yet another bird enemy is the little owl which, according to Lovibond, is active in hunting and devouring the adult flies.

Among insect parasites there is a fly (*Bucentes geniculata*) the maggot of which has been recovered from Leather Jackets in various localities. Although the parasite appears to be fairly common it is not possible with the information available to assess its efficiency as a control agent of the grub. Taking all the facts into consideration it is probably not overstating the case to say that continuous dry weather in autumn has a greater controlling effect on Leather Jackets than any other natural agency.

TOMATO SICKNESS (*Heterodera schachtii*).

In last year's 'Transactions' I recorded a case of severe damage to tomato transplants by the Root Knot Eelworm (*Heterodera marioni*) in a nursery in Roxburghshire. In 1939 my attention was drawn by Mr J. Bruce, Department of Horticulture, East of Scotland College of Agriculture, to an infestation of tomatoes by the related Potato Eelworm (*H. schachtii*) at a nursery in Midlothian which has been in operation for the past nine years. Altogether there is about half an acre under glass, and all of the ground is planted to tomatoes. Every second year the soil is steam sterilised, and in intervening years is treated with formalin. The year 1939 happened to be one in which the soil received the formalin treatment. The history of the nursery showed that there had been no previous occurrence of a *schachtii* infestation. During the whole of the nursery's existence the soil had not been once changed, so that there was no possibility of the eelworm having been introduced with infested potato soil from outside.

Previous Records.—Thirty-two cases of tomato sickness in Yorkshire due to *H. schachtii* were recorded during the period 1928-1936 by Johnson and Thompson,[1] who also refer to a single case recorded by Miles in Lancashire in 1935.

Symptoms.—Tomato plants attacked by the eelworm are affected in the same manner as potatoes. Growth is retarded, so that the plants rarely surpass a height of about four feet and wilting is severe. Infested roots turn brown and decay as a result of the larval invasion and, to make good the damage, the plant sends out a mass of fibrous roots above the first ones. At intervals along the attacked rootlets cysts of a white or brown colour, according to their age, project into the soil and are readily detached. Some of the flowers remain unopened and drop prematurely without setting. The result is an appreciable reduction in the yield of fruit.

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[1] Johnson, L. R., and Thompson, H. W., 1936. "Tomato Sickness in Yorkshire." Jour. Min. Agric., Vol. XLIII., No. 1, pp. 48-54.

Life-history.—The mature female eelworms are oval in shape and are just visible to the naked eye. They are attached to the roots of diseased plants, where they are found and fertilised by the minute, active males. After pairing, the males die, but the female continues its attachment to the host whilst its skin changes from white to dark brown. At the same time the skin becomes hard and tough and serves as a protective coat for the eggs which fill the whole of the internal cavity. Finally, they drop from the rootlets into the soil and remain dormant during the winter. The cysts may remain viable for a period of at least nine years. During this time a few eggs appear to hatch each year, but hatching is greatly speeded up by the stimulating effect of the root excretions of those plants on which the eelworm can feed and breed. Thus when a susceptible crop such as tomatoes is planted, numerous eggs hatch to liberate larvæ which burrow into and destroy the tissues of the young roots. As an offset, the plant sends out additional roots.

Source of Infestation.—A tomato crop is liable to infestation in one or other of two ways. The eelworm may be introduced into a glass house with cyst-infested soil or it may be brought in with farm manure. Under Yorkshire conditions infestation is attributed to the importation of cyst-infested soil, for in the East Riding particularly there are large tracts of land that are heavily infested with eelworm from potato crops. In some cases growers have set down a Dutch type of cold glass house on a piece of arable land, and the light of later experience has frequently shown that the enclosed piece of ground must have been infested from the start.

In the Midlothian nursery there had been no change of soil in the glass houses since their erection nine years previously. The grower, however, remembered that the farmyard manure which was used as fertiliser in 1939 had contained some refuse potatoes. It is possible that these potatoes had come from an infested crop and had been inadvertently cast on the manure heap.

Control.—(1) *Steam Sterilisation.*—This is the best method of controlling the eelworm, since it destroys the infective cysts with their contained eggs and thus renders them innocuous.

(2) *Layering the Plants.*—This remedial method is applicable to infestations which occur in small patches. The soil around and beneath the affected plants is dug out and replaced by fresh eelworm-free soil, into which the plants are layered. As a result the plants are induced to send out new roots which help them to make a substantial growth.

(3) *Mercuric Chloride.*—Johnson[1] is our authority for the introduction of mercuric chloride as a control agent for eelworm. In 1932 he carried out a series of experiments to test the efficacy of weak solutions of mercuric chloride in reducing Tomato Sickness in soils heavily infested with eelworm cysts. The chloride was applied at the rate of 1 gallon per square yard in strengths varying from 1 in 500 to 1 in 150. The treated plots produced plants which were markedly more vigorous than those on untreated plots and yielded a larger crop of fruit. The roots of treated plants remained healthy and showed only a few cysts, whereas the roots of untreated plants were rotten, and cysts were readily detected on them.

CHRYSANTHEMUM MIDGE (*Diarthronomyia chrysanthemi*).[2]

The Chrysanthemum Midge was first recorded as a destructive pest of chrysanthemums in North America in 1915, in which year, too, it was first found in Canada at Victoria in Vancouver Island. It was at Victoria some years later that I was able to see for myself the damage of which it was capable on glass-house chrysanthemums as well as in those grown out-of-doors. To-day it is fairly well distributed throughout the United States from coast to coast, and it has now established itself in Eastern as well as in Western Canada.

In America the Chrysanthemum Midge is considered to be of European origin, but so far as Britain is concerned it was not until 1927 that its presence on chrysanthemums was discovered in England in Hertfordshire and Essex. A year later it appeared in a single district of Lancashire, and it was not again until 1936 that a further outbreak of the pest occurred in England. This and the infestation of 1927 were both traced to varieties imported from the United States. In 1937 the midge was discovered in a nursery in Northern Ireland, near Belfast, and here it was found to have been introduced in cuttings which came from an infested nursery in Sussex. The latest addition to the British record comes from Scotland, where the midge was identified in a Lanarkshire nursery in December 1939 and also in adjoining greenhouses and gardens.

Damage.—The cone-shaped galls (Fig. 7) which are distributed over the leaves, stems, and buds of affected plants are diagnostic of an infestation. In severe attacks the plants become distorted, growth is retarded, and flowering is inhibited.

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[1] Johnson, L. R., 1936. "Trials of Mercuric Chloride for the Prevention of Potato Sickness." Ann. App. Biol., Vol. XXIII., No. 1, pp. 153-164.

[2] Barnes, H. F., 1940. "The Biology of the Chrysanthemum Midge in England." Ann. App. Biol., Vol. XXVII., No. 1, p. 91.

Young leaves, instead of expanding with growth, often remain folded and assume a rosette-like appearance.

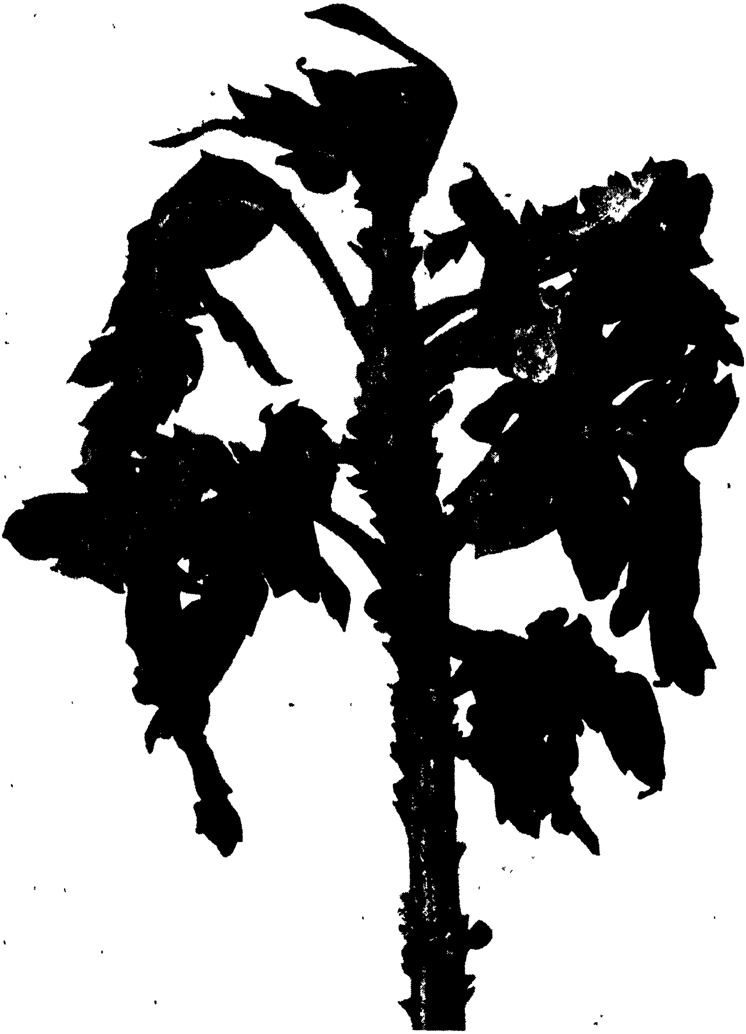

Fig. 7.—*Chrysanthemum shoot showing galls of the Chrysanthemum Midge on the leaves and stem.*

From nature. About natural size.

Life-history.—The *adult* midge is a minute orange-coloured fly about $\frac{1}{16}$ inch long and with long yellowish legs. The flies emerge from the pupæ in the galls during the early part of the morning, and the female, after pairing, lays all her eggs, amounting to 80-150, within a few hours after emergence.

The *egg* is minute, reddish-orange in colour. In length it is only slightly more than a quarter of a millimetre, which is just too small to be readily visible to the naked eye. The places which are especially favoured by the females for egg-laying are near the growing ends of the shoots. Here the eggs are found in groups on the hairs of developing leaves or in the interstices between the petioles of the unexpanded leaves of the terminal buds. The eggs are said to hatch in four to twelve days, producing minute whitish or yellowish maggots.

The *larva*, or maggot, is a legless oval, plump grub, rounded at either end, and measures about 1 mm. when full grown. Soon after hatching it burrows into the host plant, which responds by laying down a tubular gall around each grub. Inside the gall the grub completes its growth in three to four weeks or longer according to the season, and changes to a pupa within the gall. In ten days to several weeks the flies escape from the pupal skins. Whilst breeding proceeds continuously throughout the year there are two periods of maximum activity; the first when cuttings are being taken and rooted in the spring, and the second when the flowers are ready for marketing in the autumn. During winter and summer development is retarded. Barnes (*loc. cit.*) recently obtained five generations of the midge in one year under unheated glass-house conditions, and eight generations in similar time under laboratory conditions.

Control.—As soon as the Chrysanthemum Midge has been found to have been introduced into a nursery steps should be taken to secure its eradication. The longer the insect is allowed to remain the greater the expense and trouble in dealing with it. A grower who suspects the presence of the pest in his glass houses or out-of-doors should notify the Department of Agriculture for Scotland, which has powers to deal with outbreaks under the Destructive Insects and Pests (Scotland) Order of 1933. Where the affected nursery is a small one growing only common commercial varieties the owner would find it most economical to destroy the whole of his stock, and, after a specified interval, to restock with new cuttings from a source known to be free from the pest. Otherwise the measures which the Order enforces are :—

1. All plants not required for the purposes of propagation must be destroyed by fire immediately after the flowers have been cut.
2. All growth above ground must be completely removed from all plants required for propagation and must be burned.

The stools so treated must be assembled in a house which has not contained any chrysanthemum plants or cuttings for a period of at least fourteen days before the introduction of the stools.

3. All subsequent young growth on the plants so treated must be sprayed twice weekly with a nicotine solution consisting of 2 fluid oz. nicotine (95 per cent) and 1 lb. soft soap to each 10 gallon water, and all stools must be burned after cuttings have been taken.

4. All cuttings must be dipped in the nicotine solution and must be rooted in a separate house in which again no chrysanthemums have been present for at least fourteen days. Spraying of the cuttings must then be carried out twice in each week.

The Chrysanthemum Leaf Miner (*Phytomyza atricornis*).

The discovery of the Chrysanthemum Midge in Scotland has served to stimulate the interest of chrysanthemum growers in the pests which attack this plant. Judging from the inquiries which have come to hand there would appear to have been some doubt concerning recognition of the damage done by the Chrysanthemum Midge, and some growers appear to have mistaken the work of the Chrysanthemum Leaf Miner for that of the midge. Actually the damage caused by the two insects is quite distinct, and there should be no reason for confusing mines that ramify in the substance of the leaf for galls that project from the leaf- and stem-surfaces.

Damage.—The Chrysanthemum Leaf Miner is the maggot of a small fly which also attacks cinerarias and other cultivated composites. The work of the miner is readily recognised by the pale, winding galleries (Fig. 8) which meander here and there through the leaves. Their beginnings are slender, but as the burrowing maggot increases in size so do the passages increase in breadth. In cases of severe attack, where there may be a dozen or more maggots per leaf, the whole of the green tissue may be excavated, so that the various galleries coalesce into a single large blotch affecting the whole leaf. Such leaves shrivel and die, and where several leaves are similarly attacked the plants are so weakened that they either fail to produce flowers or a few small late ones. Young plants are frequently destroyed by the miner.

Life-history.—The flies are small, dark-grey, with a single pair of wings. In length they measure about $\frac{1}{10}$ inch. Their activities are limited to short, jerky flights among the foliage of the plants. The females are said to live for two or three weeks, and may lay about 100 eggs, which are inserted into the tissue of the lower surface of the leaf. In four to six days the maggots emerge and at once begin feeding on the green substance between the upper and lower surfaces, with the result that winding galleries develop slowly all through the leaf. When full grown the maggot stops feeding and changes to a pupa inside its last skin, which persists unmoulted.

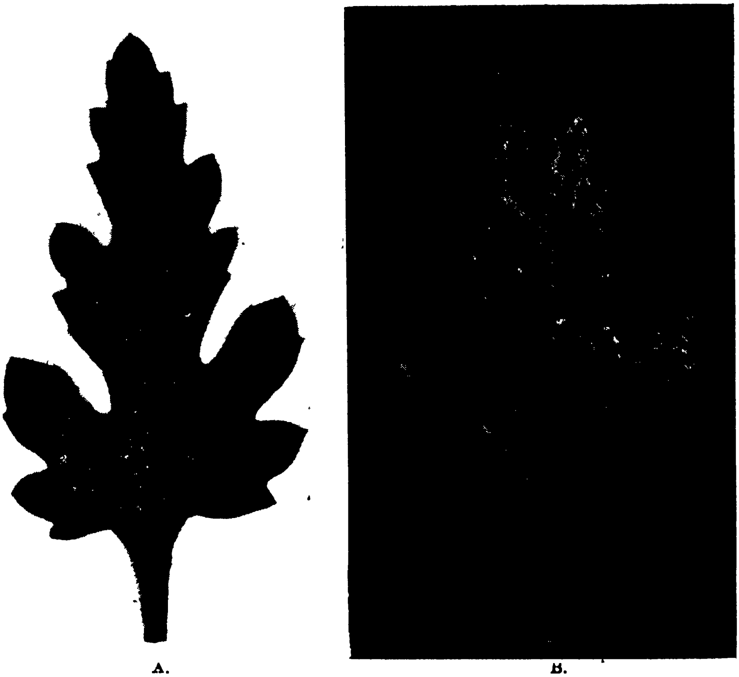

Fig. 8.—*Two leaves of chrysanthemum mined by the maggots of the Chrysanthemum Leaf Miner,* Phytomyza atricornis. A, *Lower surface of leaf showing galleries with maggots and pupa-cases* in situ; B, *Upper surface of leaf showing coalescence of galleries.*

From nature. About natural size.

Instead, it contracts, hardens, and gradually changes from yellow to dark-brown. Both the maggots and the pupa-cases can be seen in their mines, where they form small bulgings on the lower side of the leaves (Fig. 8A). By holding the leaves to the light the inhabitants of the mines are the more readily discernible.

The pupal stage lasts for one to three weeks, when the flies push off the front part of the pupa-case and escape. In glass houses breeding proceeds continuously during the whole year ;

out-of-doors it is confined to summer and autumn, the last generation hibernating as pupæ in the fallen leaves.

Control.—In cases of slight infestations mined leaves should be removed and burnt. In commercial glass houses the plants should be sprayed regularly at intervals of two weeks with a nicotine-soap wash, care being taken that the wash is applied to both surfaces of the leaves. This frequency of treatment is necessary because the life-cycle of the miner is brief and there is continual risk of infestation from flies bred on neighbouring chrysanthemums or on wild plants. Flies in glass houses may be destroyed by light fumigations of hydrocyanic acid gas or nicotine.

SWEDE AND CABBAGE APHIDES (*Brevicoryne brassicae* and *Myzus persicae*).

In the 'Transactions' of 1936 reference was made to an outbreak of *B. brassicae* and *M. persicae*, both of which caused extensive damage to cruciferous crops in the Lothians in the summer of 1935. Although the two are frequently associated on the same host plant they can be readily distinguished. *B. brassicae*, the Mealy Cabbage Aphis, is greyish-green with a mealy waxen coat. *M. persicae*, or the Potato Aphis, on the other hand, is green, yellow, or rose in colour, and is devoid of a waxen coat. Both have the habit of overwintering on Brassicas, but, whereas *B. brassicae* is confined to cruciferous plants throughout the year, *M. persicae* migrates to the potato crop in summer. Therefore, the growing of large fields of Brassicas and swedes in close proximity to large acreages of potatoes, as is done in the Lothians, becomes an important factor in the maintenance and spread of virus diseases of potatoes, of which *M. persicae* is the chief carrier.

Last year (1939) the Lothians again experienced a severe aphid outbreak, which involved not only the large market-garden area around Musselburgh, Tranent and Prestonpans, but extended also to Dunbar. The aphids which were chiefly concerned were the Mealy Cabbage Aphis and the Potato Aphis, but that conditions were generally favourable to aphids was shown by the abundance of the Grain Aphis (*Macrosiphum granarium*) on cereals and the Black Bean Aphis (*Aphis fabae*) on beets. At one market garden the owner reckoned that he had lost one-quarter of his cruciferous crops, whilst another described how he had sown a field seven times with M'Ewan's Early Cabbage, and the aphids had destroyed the plants soon after they came through the ground. In the second week of August the potato shaws began to flag and were soon destroyed by the attacks of *Myzus persicae*, although the tubers had not yet achieved ware size. On badly infested farms the yield of potatoes was at least halved.

Whilst it is not always easy to discover the underlying cause or causes of an insect outbreak, it is perhaps no exaggeration to say that there are no other insects which are so sensitive to changes of weather as are aphids. Warm dry weather in early summer supplies a stimulus to reproduction, which greatly increases its rate and induces an outbreak in late summer. Cold wet weather has just the opposite effect and is probably even more important in stemming an increase of aphid numbers than are predatory or parasitic insects. As between the aphid and its insect enemies there is usually a lag, so that the latter cannot cope with the much greater rate of increase of the former once an outbreak has commenced.

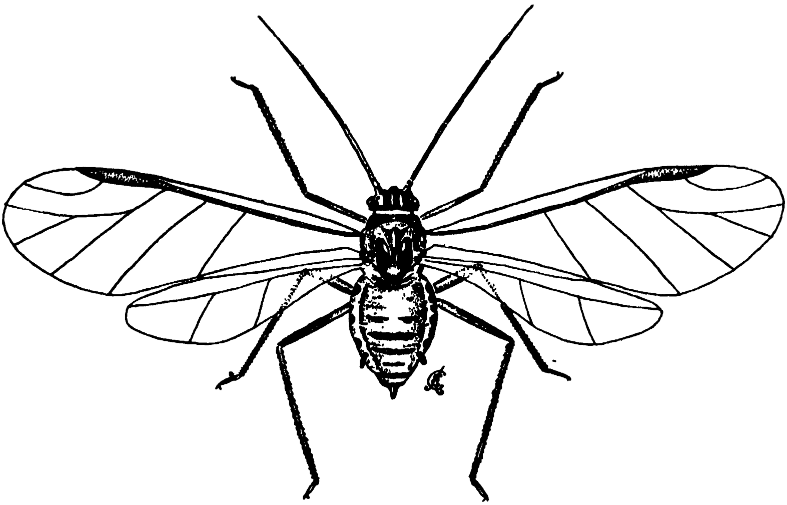

Fig. 9.—Brevicoryne brassicæ. *Mealy Cabbage Aphis. Winged Virgin Female.* × 12.

From nature.

Life-history and Habits.—Both the Mealy Cabbage Aphis (Fig. 9) and the Potato Aphis (Fig. 10) spend the winter on the stems and lower leaves of Brussels sprouts, winter cabbage and cauliflower, the former as an egg, the latter as a wingless female. The eggs of the Mealy Cabbage Aphis, which are black, hatch about March or April and produce young that develop into wingless females. The progeny of the wingless females of both kinds of aphid represents the nuclei of colonies which proceed to increase on the winter Brassicas. As the season advances winged migrants appear which fly to the plants of the new crops and give rise to small colonies in the heart or crown. The aphids spread over the young leaves, first the upper surfaces and later extending to the lower surfaces as well. In June winged forms of the Potato Aphis migrate to the potato crop, where they produce an abundance of wingless forms. In August and September, when the potatoes are mature, winged forms are again produced which return to the winter hosts, there to give rise once more to wingless forms that enter hibernation along with the eggs of the Mealy Cabbage Aphis, which are laid during October and November.

Damage.—Both aphids are responsible for widespread damage to Brassicas by draining the sap of leaves and stems.

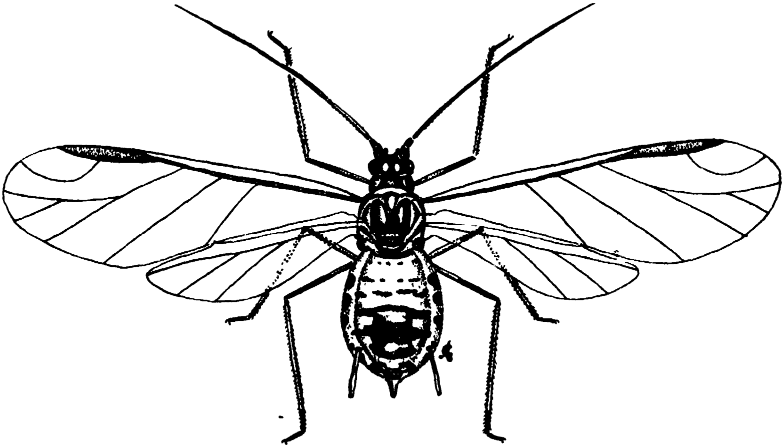

Fig. 10.—Myzus persicæ. *Potato Aphis. Winged Virgin Female.* × 12. From nature.

The plants make little headway in their growth and may remain stunted. The leaves become malformed, swollen, curled and discoloured, and hearting may be inhibited. Even should the plants proceed to develop they become overspread with sticky honey-dew excreted by the insects, with the result that they are rendered unmarketable. In swedes the destruction of the leaves materially cuts down the yield.

Depredations of the Potato Aphis do not end with Brassicas as do those of the Mealy Cabbage Aphis. It extends its activities to the growing potato crop, where by sheer force of numbers it may completely destroy the foliage before the crop ripens, not to mention the risk of its infecting the plants with the viruses of leaf roll and mosaic.

One market gardener whose crops were particularly heavily infested kindly furnished an estimate of the losses which he incurred as a result of aphid attack. In all 66 acres of crops were affected, and the average loss per acre amounted to about £19. In the table which follows it will be understood that cruciferous crops were attacked by the Mealy Cabbage Aphis and the Potato Aphis, the potato crop by the Potato Aphis, whilst the beetroot crop was infested by the Bean Aphis.

TABLE I. ESTIMATED LOSSES OF CROPS DUE TO APHID INFESTATION IN A MARKET GARDEN NEAR EDINBURGH, 1939.

Crop.	Acreage.	Loss per acre.			Total loss.		
		£	*s.*	*d.*	£	*s.*	*d.*
Potato	10	15	0	0	150	0	0
Beetroot	20	15	0	0	300	0	0
Cauliflower [1] . . .	10	30	0	0	300	0	0
Savoys	10	20	0	0	200	0	0
Cabbage	6	18	15	0	112	10	0
Broccoli [1]	3	25	0	0	75	0	0
White turnip [1] . . .	1	25	0	0	25	0	0
Lettuce	6	16	13	4	100	0	0

Control.—Methods of control of the Mealy Cabbage Aphis are given in Advisory Leaflet No. 269, Ministry of Agriculture and Fisheries. The recommendations made there apply equally to *M. persicae* on cruciferous crops. Among other things it is advised that—

(1) Old Brussels sprouts, broccoli, and cabbage should be ploughed under not later than 15th May; otherwise the stalks should be gathered and piled in heaps where they may be burnt or left to dry. This method aims at getting rid of overwintering aphids and eggs, and if generally adopted throughout an area subject to outbreaks would go far to solve the aphid problem.

(2) All autumn-sown Brassicas should be examined before being planted out. If aphis is found the plants should be dipped in a nicotine wash—nicotine, 98 per cent, 3 oz.; soft soap, 4 lb.; water, 40 gallons.

(3) Examine the new crop in June, and if infested dust with a 3 per cent nicotine powder at the rate of 40 or more lbs. per acre according to the size of the plants.

The chief fault of the dusting method is that the powder does not reach the aphids attached to the under side of the basal leaves of the host plants. However, this is less the fault of the dust than the machines used in its application. The same criticism applies equally to machines for wet sprays. In the Lothians tests were made with an atomised pyrethrum preparation which gave fairly good results. Elsewhere it has been said to have caused leaf-scorch.

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[1] Whole crop was destroyed.

On potatoes in the field *M. persicae* is controlled by the application of a combination spray consisting of nicotine sulphate, 8 to 10 oz., and Bordeaux mixture, 50 gallons. Two or three treatments should be applied at intervals of ten to fourteen days, the first when the plants are five to six weeks old.

AGRICULTURAL RESEARCH IN SCOTLAND IN 1939.

BEING A BRIEF SUMMARY OF THE WORK AT THE SCOTTISH AGRICULTURAL RESEARCH STATIONS DURING THE YEAR.

Readers desiring fuller information on any of the subjects mentioned should write to the Director of the Station at which the investigation is being carried out.

INSTITUTE OF ANIMAL GENETICS.

University of Edinburgh, West Mains Road.

Pigs.—The extent to which carcase quality of bacon pigs may be affected by the rate of growth and by the general shape of the growth curve has been investigated in pigs raised under ordinary indoor feeding practice. It was found that loin and leg length tended to increase, and thickness of shoulder-fat to decrease, as weaning weight improved. Fast post-weaning growth was associated with increased thickness of back-fat, but the point most sensitive to differences in growth rate varied from one group of pigs to another. Breadth of eye-muscle appeared to be largely independent of growth rate. Thickness of back-fat was strongly dependent on loin length in one group of pigs but not in another, and in general the effects of growth rate seemed to depend on the underlying genetic differences in carcase conformation.

With the object of estimating the contribution which outstanding performances by individual pigs might make to the pig population as a whole, an analysis has been made of the breeding policy adopted by a sample of pig breeders. The outstanding feature was the large proportion of breeding sows brought into herds from unrelated stock, in many herds amounting to more than half. This extensive interchange of blood would be expected to affect the development of strains of pigs of special characteristics. It is hoped to extend the investigation to a larger number of herds and to determine whether the methods of breeding employed are the most efficient for achieving the desired ends.

Poultry.—Among the poultry problems investigated during the year were several of general interest.

The first concerned the length of the laying period in hens. An examination of a large number of records indicated that although hens will cease production at varying times from July to December it could be shown statistically that individual birds have a strong tendency to finish egg-laying at or about the same date in successive years. The day on which the pullet produced her last egg of the season was not as reliable an indication of her characteristic time as the date of last egg in other years.

The problem of the moult is one that affects all poultry breeders, for at this time there is a cessation of egg production until the new plumage is grown. In order to throw some light on the question whether a hen moults because she ceases to lay, or *vice versa*, the moult was studied in castrated males. The capon sheds feathers at all times of the year, but these birds were found to show the most intense feather casting in May and early June. From this it is concluded that moulting will take place in the absence of any sex glands, and that since this moult occurs earlier than in the case of the hen the function of the sex glands is to postpone the moult until a later period of the year.

Among one of the inbred lines of Brown Leghorns maintained at the Institute varying amounts of female plumage are being shown by the males. At the same time, in another inbred line, the females tend to develop spurs quite as strong as cockerels of the same age. These characters are being studied in order to obtain information as to the hereditary nature of sex differences.

Rabbits.—The mode of inheritance of fur properties important in pelt production has been further studied, and it now appears almost certain that whilst modifying factors play an important part there is one definite major factor of a recessive nature which produces the desired fine-textured pelt. On the other hand, it is now believed that there is a series of factors, of a dominant nature, which control length of coat.

Another case of somatic segregation similar to those last reported has been sent to the Institute. Unfortunately this rabbit had been killed, so no breeding tests were possible, but no similar cases had appeared in the stock from which it came, and there is, therefore, no more evidence that a tendency for the condition was inherited than has been found in other cases reported.

A split penis is a fairly frequent cause of sterility in male rabbits, and as it is especially common in certain breeds and strains it is suggestive that a tendency for the condition is inherited as a recessive character. Breeding experiments are being undertaken to investigate this suggestion.

The factors influencing the bright yellow shade found in the Tan and some other varieties of rabbits is now being studied, as also is the Silvering of Argentes and the Silver Breeds. Preliminary breeding has been satisfactory in regard to these two matters.

Two strains of rabbits have been fixed after several years' selection, which show a marked degree of variation in the duration of the moulting period. These will now form a valuable material for the study of the inheritance of rapid or prolonged moulting periods.

Other studies referred to in previous reports are being continued.

A number of lectures have been given during the past year, and demonstrations of an educational and scientific nature have been arranged at several Conferences, as well as at the International Congress of Genetics. Close contact continues to be kept with the breeders through the British Rabbit Council, and personal attendance has been possible at a number of rabbit shows and meetings during the period under review. In addition to the usual large number of inquiries for advice of a scientific nature, since the outbreak of hostilities many hundreds of inquiries from potential rabbit-keepers have been dealt with. These have in all cases been supplied with as much assistance as possible, advice regarding the most suitable breeds and crosses being the most frequently desired information.

ANIMAL DISEASES RESEARCH ASSOCIATION.

MOREDUN INSTITUTE, GILMERTON, MID-LOTHIAN.

Louping-Ill.—During the past year there was carried out a large-scale field experiment for the purpose of testing the comparative efficiency of vaccine prepared from virus obtained by artificial culture in the laboratory and of that derived from sheep affected with the disease. It was found that the 'new type' vaccine is capable of affording a degree of protection equal to that of the 'old type.'

For the purpose of assessing the value of hyper-immune serum in the prevention of louping-ill in lambs an extensive controlled experiment was also carried out in the field. It was shown that by the use of hyper-immune serum the mortality in young lambs could be markedly reduced. The serum is, however, expensive and difficult to produce on a large scale; further experiments, therefore, are now in progress for the purpose of evolving a vaccine which will be at once safe and effective for use in young lambs.

Braxy.—Braxy vaccine has been issued for several years as a 'single dose vaccine,' and continues to prove highly effective as a means of controlling the disease. It should be noted, however, that on farms on which braxy is particularly virulent the vaccination may with advantage be repeated after an interval of fourteen days.

White Scour in Calves.—The investigations carried out during the past three years have afforded evidence that calves born from cows whose colostrum is deficient in vitamin A are predisposed to white scour; whereas calves receiving colostrum rich in vitamin A are relatively insusceptible to the disease. There are now in progress experiments designed to test the effect of feeding substances rich in vitamin A, such as cod liver oil, grass silage, and dried grass as means of maintaining in stall-fed cows a high level of vitamin A in the colostrum.

Scrapie.—Since there has been obtained evidence that scrapie is due to an infective agent, an experimental hirsel has been purchased and is being maintained for the purpose of studying the cause and nature of the disease. Because of the prolonged incubative period of scrapie the investigation must be a lengthy one.

Pine.—It has now been definitely established that in certain districts pine can be both prevented and cured by the administration of cobalt. There are now in progress further experiments designed to determine whether the application to pasture of cobalt-rich manures will raise the cobalt content of the herbage and so prevent the disease.

Pulpy Kidney Disease in Lambs.—Severe losses are each year experienced from pulpy kidney disease. This affection attacks lambs during the first few weeks after birth and is due to a micro-organism closely related to that causing lamb dysentery. Experiments are in progress for the purpose of evolving a means of preventing the disease in the lamb by the vaccination of the pregnant ewe.

Grass Sickness in Horses.—The investigation of grass sickness continues to be one of the leading research problems. During 1939 the pasture from thirty 'affected' fields was the subject of systematic biochemical study, and further investigation of the development of the disease in its early phases has been carried out. While much information of a negative character has been obtained the nature of the disease still remains undetermined.

Contagious Bovine Abortion.—Fundamental studies of *Brucella abortus* as it affects laboratory animals are being continued, and the Association is working on this problem in close collaboration with the Agricultural Research Council.

THE ROWETT RESEARCH INSTITUTE.

BUCKSBURN, ABERDEEN.

Dried Grass.—In experiments with poultry, dried grass proved satisfactory when used to the extent of 20 per cent of the total ration. Hatchability, growth, and egg production were good. As the dried grass used had a fairly high fibre content (20 per cent), a large part of the remainder of the ration was composed of concentrated foods, such as maize.

Another experiment showed that the allowance of concentrates to birds on winter pasture could not be appreciably reduced and maximum production maintained. It has been concluded in the meantime, therefore, that grass as a means of reducing the consumption by poultry of cereal concentrates can best be used by cutting and drying and then incorporating it in the ration.

Grass Silage.—Silage has been successfully made in shallow pits from young short grass without molasses. Adequate and even consolidation is the essential factor. Cows have eaten up to 150 lb. per day of silage made in this way, and have maintained an average yield of 5 gallons per day over a period of two months on nothing but silage. No taint has been observed in the milk, but the colour was visibly richer.

Restricted Feeding of Pigs.—A saving of approximately 1 cwt. of concentrates was obtained on a group of pigs fed on a restricted scale. They took fourteen days longer to get to bacon weight (224 lb.) than a group fed *ad lib.* The average number of pounds of food per pound live-weight increase in the restricted group was 3·24 lb.

Pasture for Fattening Pigs.—A saving of 35 lb. of food in 103 days was obtained by folding groups of pigs over good summer pasture.

Increased use of Straw for Feeding.—Preliminary work has shown that the feeding value of straw can be increased considerably by treatment with caustic soda prior to feeding. Feeding trials with cattle and sheep are under way.

Fowl Paralysis.—Results of experiments extending over several years are as follows :—

The disease is of an infectious nature and the agent responsible is transmitted *via* the egg.

Effective control in several outbreaks can be obtained (*a*) by removing the chicks at day-old to clean pasture and premises well away from the affected area, or (*b*) by confining the whole stock indoors for at least one generation and replacing the floor litter at weekly intervals.

THE SCOTTISH PLANT BREEDING STATION.

CRAIGS HOUSE, CORSTORPHINE, EDINBURGH.

At the Station plant breeding experiments are in progress with all the crop plants of major importance in Scottish agriculture. Each year it is customary to review in 'The Transactions' one section of the work, and on this occasion the subject-matter will be confined to virus diseases of potatoes.

Every potato grower is familiar with the leaf roll and mosaic diseases of the potato. These diseases are caused by the infection of plants with one or more of the agents known as viruses. Leaf roll is the visible sign of infection with a single virus, usually referred to as the leaf roll virus. Mosaic diseases, however, are varied in their type and severity, and it is now known that several viruses either singly or in combination may cause them. These viruses are distinguished for reference by letters of the alphabet. Thus in this review the letters A, B, C, X, and Y all refer to viruses which in certain circumstances are capable of producing mosaic diseases upon potato plants.

The virus diseases problem presents two widely different aspects to the potato breeder. Firstly, these diseases have immediate effects on the plants used as parents in breeding and on the offspring of these parents. Secondly, there are the possibilities of breeding potato varieties which are immune from or resistant to the diseases caused by potato viruses.

An extended examination of diseased plants and of several thousand seedlings derived from them has shown that, although flowering is reduced considerably and breeding impeded by the presence of virus diseases, the viruses causing the diseases are not transmitted from parent to offspring through the seed contained in the berry or plum. Nevertheless, abnormal seedlings occur with greater frequency among the offspring of diseased parents than among those of their healthy counterparts, and for this reason it is undesirable to use virus-affected plants as parent stock for breeding.

The possibilities of breeding potato varieties immune from or resistant to virus diseases are dependent upon there being such qualities already present among cultivated potatoes or among those 'wild' species of potato which are capable of being used as parents in conjunction with the cultivated types. The primary search for varieties having these qualities has been made by an examination in greenhouse and field of the behaviour towards infection of many old and new, British and foreign, cultivated varieties. In the course of this work the widespread occurrence of some viruses, the unsuspected presence of others, and the presence of hitherto obscure viruses as active agents of disease have been revealed. In addition, there has been brought to light a number of varieties which are more resistant than the majority to the entrance of certain viruses into their tissues; others which though not resistant to the entry of certain viruses are not markedly affected by their presence; and yet others which can readily be infected artificially but which in field culture are virtually immune from infection with certain viruses. Each of these qualities has been shown, through appropriate tests, to be heritable. The foundation of a vigorous policy directed towards improving the potato as regards resistance to some of the common virus diseases has thus been laid.

The most promising lines of investigation with regard to leaf roll and the mosaic diseases caused by virus Y have been provided by the identification of varieties which offer positive resistance to infection and positive resistance to the disease after infection has taken place. In the case of two obscure non-commercial varieties the resistance to leaf roll has proved to be of a very high degree and has not broken down under intensive conditions of infection in field or laboratory. Furthermore, their seedlings in the first generation are maintaining this high standard of resistance.

Many potato varieties when infected with virus X, either naturally or artificially, show mosaic symptoms. Other varieties when seen in the field are never affected with mosaic diseases due to virus X. These latter varieties, when infected artificially in the laboratory, however, are killed with this virus. Thus there are varieties which remain free from virus X in the field, yet succumb to the virus in the laboratory. It has been found that this apparent contradiction in behaviour is actually an expression of the same phenomenon. Under field conditions of infection the virus enters and causes the death of the tissue immediately surrounding the point of entry. This dead tissue acts as a barrier against further progress of the virus into the plant. The virus is thus localised at the point of infection and the plant remains, in effect, healthy. Varieties which behave in this fashion towards viruses X, A, B or C, that is, are killed with one or more of them in the laboratory but remain free from general infection with them in the field, are said to be hypersensitive to or field immune or virtually immune from the virus or viruses concerned. Hypersensitiveness is thus a valuable property, and varieties possessing it are of particular economic importance to Scottish agriculture, since the most common of all the virus diseases in Scotland are those caused by virus X either alone or in combination with viruses A or B. In illustration of this value it may be pointed out that in 1937 over 70 per cent of the total acreage of varieties hypersensitive to virus X was certified Grade A by the Department of Agriculture for Scotland. By contrast only 7 per cent of the total inspected acreage of other varieties attained Grade A standard.

The types and extent of virus diseases in potato crops are dependent not only upon the varieties grown, as indicated above, but also upon the conditions under which they are grown. A survey of diseases throughout Scotland has revealed that leaf roll is more prevalent in the East than in the West, and in the South than in the North. Severe mosaic due to virus Y, on the other hand, is chiefly a disease of the South-West. Both these diseases are spread through the agency of sucking insects, chiefly aphides or green-fly. A primary examination of the aphis populations in the South-West and South-East has been made therefore with the object of throwing light on the distribution of the two diseases. It was found that not only were the aphis populations of the South-East much greater than those of the South-West, but also that the constitution of the populations differed between the two areas. Contrary to the distribution of the aphis-borne diseases, the distribution of mild and severe mosaics due to viruses X and A was found to be largely independent of locality and greatly dependent on variety.

THE WEST OF SCOTLAND AGRICULTURAL COLLEGE.

(a) MILK PRODUCTION DEPARTMENT.

Sprouted Maize for Dairy Cows.—In this investigation sprouted maize was compared with mangolds as a source of succulence for milking cows in order to ascertain what effect, if any, the feeding of sprouted maize would have on the yield and composition of the milk.

Sixteen Ayrshire cows were used; the animals selected were grouped in two lots. The trial extended over a period of fifty-four days, comprising three experimental periods of ten days, each preceded by a preliminary period of eight days. Group A received sprouted maize during Period II., while Group B received sprouted maize during Periods I. and III. During the preliminary periods the groups received the ration to be fed in the following period.

The sprouted maize was fed to replace one-half or 20 lb. mangolds in the basal ration.

Group A, receiving sprout during Period II., gave a milk yield of 2907 lb., against an average yield of 2869 lb. for Periods I. and III., when mangolds were fed. The difference of 38 lb. represents an increase of 1·34 per cent in favour of sprout.

Group B, fed sprout during Periods I. and III., gave an average yield of 2787 lb.; during Period II. on mangolds the yield was 2914 lb. This group, therefore, showed an increase in yield of 127 lb., or 4·53 per cent in favour of mangolds. Taking groups A and B together, it was found that the increase in milk production for mangolds compared with sprout was 88 lb. or 1·53 per cent. The above variations in yields are of no significance, as they are not outwith the bounds of experimental error.

The effect of sprout on butter-fat production was also studied.

Group A cows produced 114 lb. of butter-fat during the period they were fed sprout, compared with an average production of 113 lb. for the mangold periods. Group B cows showed a wider treatment difference. Their average production on sprout was 106 lb., while during the period on mangolds the fat produced was almost 113 lb., an increase of 6 per cent.

The investigation indicates that sprouted maize can satisfactorily replace mangolds as a source of succulence for dairy cows without giving any marked variation in yield or in the butter-fat content of the milk.

Dried Whey for Milk Production.—This small-scale trial was intended only as a preliminary to further work on the suitability of dried whey powder for inclusion in the production ration of dairy cows.

The trial extended over three periods of eight days, each preceded by a preliminary period of four days. During Periods I. and III., 10 per cent dried whey powder was included in the control production ration.

The average yield for the Periods I. and III. were 1313¼ lb. of milk and 48·76 lb. butter-fat. Compared with the standard ration there was an increase of 57 lb., or 4·04 per cent on the dried whey feeding.

This investigation, as has been already stated, was of a preliminary nature, and it is impossible from this small trial to form any definite conclusion. During the first period on whey the yield was considerably increased, and the yield during Period I. exceeded that of Period II. by approximately 9 per cent. There was a falling off in yield during Period II. on the control ration, which was not regained during the final period as might have been expected when whey was reintroduced. The yield, however, during the final period was fairly well maintained at the Period II. level.

The cows took readily to the whey powder ration, and no difficulty was experienced in changing over to the whey ration.

Registers of Proven Ayrshire Sires and Dams.—The register of Proven Ayrshire Sires has now been completed for the years 1935-37 and will shortly be ready for publication in the 'Breed Journal.' This section is now up to date. Altogether, 445 bulls are listed, of which total 199 have already appeared in the register, but have subsequently had additional daughters qualifying as high yielders. The revised number of daughters is given for these bulls, along with particulars of 246 bulls which have become eligible for inclusion as Proven Sires since the list was last published.

Work on Proven Dams is being continued, and it should be possible to complete the register of Proven Ayrshire Dams at an early date.

(*b*) MILK UTILISATION DEPARTMENT.

Milk.—The great increase in the number of farms on which mechanical milking is now practised has resulted in serious difficulty on the part of many milk producers in complying with the bacterial requirements of graded milks. In the vast majority of cases the heavy contamination of the farm milk supply is due to faulty care of the machine. The difficulty is not confined to the users of any particular make of machine. Special attention has been devoted to the various methods of machine washing and sterilisation as practised on the farm, and a reliable technique for assessing the value of such practices has been introduced. The experience of the department has shown that the machine sterilisation is best accomplished under average farm conditions by means of boiling water drawn through the milking units after these have been rendered clean and freed from all traces of milk by a suitable method of washing.

A number of milk producers have introduced the practice of irrigating the units with strong chlorine disinfectants. Such procedure in itself has been found quite unreliable as a means of insuring low bacterial numbers in machine-drawn milk. The chlorine rinses can only be regarded as useful in milk production provided the surfaces to be sterilised are first rendered free from all traces of milk and extraneous matter.

The persistent failure of milk of low bacterial count to conform to the coliform standard on farms exercising a high standard of cleanliness has been traced to the leakage of contaminated farm water supplies into the milk during its passage over the cooler surface as the result of defects in cooler construction.

Mastitis.—Failure on the part of the herd owner to determine the exact nature of the causal organism present in the udder of his infected cows has been shown to be responsible for the very minor success attained in the use of certain chemical agents used as a curative treatment for mastitis. In many cases, large numbers of disease organisms have been found persisting in the udders of improperly treated cows, emphasising the great importance of correct methodical diagnosis before any curative treatment is undertaken.

The Density of Milk.—A comprehensive investigation undertaken to determine the exact weight of a gallon of milk as received at farmers' creameries throughout the country over a prolonged period afforded an opportunity to examine the composition of the milk delivered. While there would seem to be no difficulty in maintaining the fat requirement of the Sale of Milk Regulations and the Marketing Board Contract, it has been found that one sample out of every four of the hundreds of samples of mixed herd milks failed to comply with the solids-not-fat requirement of the Milk Regulations.

Cream.—The examination of representative creams, taken from both wholesale and retail sources, for bacterial numbers, acidity and keeping qualities, was continued throughout the summer of 1939 with the object of obtaining information to assist in the elaboration of cream standards which the commercial cream trade could reasonably attain. The rate of acid development in creams of varying fat percentages maintained within varying temperature ranges and the relationship between bacterial numbers and the rate of acid development have been investigated. Deterioration of cream and the appearance of off-flavours would seem to depend more on the types of organisms than on the total numbers present in the cream, which, in turn, is largely governed by the cleanliness of the milk from which the cream supply is obtained.

Butter.—The influence of sprouted maize in the ration of the cow on the quality and manufacturing properties of the milk produced was examined when sprouted maize supplanted mangolds as part of the succulence in an experimental ration. The flavour of the butters made from the milk of cows on the mangold ration was invariably superior to that of the corresponding butters from cows fed sprouted maize. The influence of the maize was more markedly shown on the keeping properties. The longer the period during which the sprouted maize was fed the shorter were the keeping properties of the butter. A distinct tendency to develop rancidity was a feature found in all the experimental butters made from the milk of the cows fed the sprouted maize.

The department carried out a full examination of the composition and keeping properties of a comprehensive series of butters drawn from the creameries of registered National Mark Butter manufacturers and subjected to long periods of storage in an investigation undertaken by the Department of Agriculture for Scotland. The striking effect of the degree of acidity in the cream at the time of churning on the keeping quality of the butter was most clearly demonstrated, the butters from the low acid creams gaining in all cases the highest marks allotted for flavour in the final butter grading.

Distinct variations in the amounts of salts and moisture and the numbers of bacteria and other organisms were found not only between the different creameries participating in the experiment, but also between different lots of butter from the same butter manufacturer.

The manufacture of butter on the limited scale as practised on the small farm has increased considerably with war conditions. Standard methods of buttermaking involving the use of starter are not practicable, with the result that the resulting product lacks the flavour and keeping properties of first quality butter. A new method of handling the cream in which pasteurisation and starter are not required has been successfully elaborated in the department. The bacteriological aspects of the factors involved in the prevention of cream and butter deterioration by the addition of salt to the cream during its period of collection have received considerable attention. The method is of special application during the winter months when butter from gathered cream is apt to show the presence of off-flavours and lack sufficient keeping properties.

THE HANNAH DAIRY RESEARCH INSTITUTE.

KIRKHILL, AYR.

Nutrition.—Reference has been made in previous Reports to the Institute's investigations into the protein requirements of dairy cows. A general review of this work indicates that the level of protein intake for milk production can be lowered from the previously recognised standard of 0·6 lb. protein equivalent per 10 lb. milk to between 0·40 and 0·44 lb., provided that proteins of high biological value are included in the ration.

As regards the biological value of various proteins, it has been found that in general those of home-produced feeding-stuffs (such as beans, bloodmeal, and fresh, dried or ensiled grass) are superior to those of imported feeding-stuffs, such as oilseeds, meals, and maize products. It has been found that the proteins of autumn herbage have a somewhat lower biological value than those of spring and summer herbage.

The Importance of Home-Produced Feeding-stuffs.—The underlying object of the Institute's work in this field of animal nutrition has been to determine how far the country's dairy cattle could be rendered less dependent on imported feeding-stuffs. One method of achieving this end would be to lower the protein feeding standards, a possibility already referred to in the previous paragraph. A second method would be to introduce new processes for the conservation of materials of relatively high protein content in a form suitable for winter feeding. Among the most hopeful developments in this direction is the conservation of young grass, since grass herbage, if cut at an early stage of growth, contains an exceptionally high proportion of protein. The Institute has completed an extensive series of investigations into the two most widely advocated methods of grass conservation—*i.e.*, ensiling and artificial drying. Practical trials have been carried out on a commercial scale into the economic aspects of both methods of conservation. As regards grass drying, the trials have been carried out over a three-year period, and a full account of the results is at present being prepared for publication. As regards ensiling, considerable experience has been gained in regard to the various alternative methods of treatment. During the past season a new design of silo has been given an extensive trial. Field investigations have also been in progress with the object of studying methods by which the supply of home-produced feeding-stuffs might be increased.

The Genetics of Dairy Cattle.—Work has been in progress during the year under review on the significance of persistency of lactation in relation to the inheritance of milk yield. Results to date show that existing methods of describing mathematically the lactation curve have certain drawbacks, and new methods have therefore been explored. The effect of environmental factors has also been found to interfere seriously with the shape of the lactation curve, and therefore with the apparent persistency of milk yield. It is hoped that by the careful analysis of a number of individual curves it will be possible to differentiate the hereditary from the environmental factors, and thus make it possible to reach sound conclusions regarding the mode of inheritance of persistency.

Bovine Mastitis.—In co-operation with the Agricultural Research Council, the Institute is undertaking experimental control measures in a large number of typical dairy herds. Side by side with this control work investigations are being continued into the efficacy of various chemo-therapeutic agents, such as acriflavine and enflavine, in destroying the causal organism, while the value of sulphanilamide compounds is also being tested.

Milk Products.—The Institute's work has been largely concerned with problems involved in the production of condensed and dried milks. Studies have been made of the keeping quality of milk powders under various storage conditions, while extensive investigations have also been made into the bacteriological quality of condensed, evaporated, and dried milks at different stages of production and derived from widely varying sources. The various factors which affect the solubility of dried milks have also been elucidated.

MACAULAY INSTITUTE FOR SOIL RESEARCH.

CRAIGIEBUCKLER, ABERDEEN.

The work carried out at the Macaulay Institute for Soil Research can be divided into the following main groups: Soil Fertility Investigations and Advisory Work; Soil Surveys and Geological Work; Forest Soils; Peat Soils; Soil Drainage Investigations; and Spectrographic Work.

Soil Fertility Investigations and Advisory Work.—As mentioned in previous years' Reports, the Institute undertakes the testing of soils on application from farmers. During the year approximately 2400 samples of soil were examined, and Reports dealing mainly with advice on manuring and liming of the land were issued. On the outbreak of war arrangements were made to enable the Institute to cope with a considerable increase in this branch of work.

General soil fertility investigations have been continued, and on much the same lines as hitherto, and special attention is being paid to experimental work on lime and slag. During the year about half a dozen large-scale experiments on arable land were laid down at the request of the Land Fertility Committee to obtain information on the effects of lime and basic slag on crop yield and soil properties. These experiments were laid down on different types of soils throughout the North of Scotland, and observations will be continued over a number of years.

Experiments on forest nursery soils are being continued, and as in previous years co-operative work has been continued in collaboration with the Animal Diseases Research Association with a view to studying the possible relationships between soil properties and the incidence of disease.

Soil Surveys and Geological Work.—The detailed soil survey in the Insch district has been extended, and some 90 sq. miles have now been completed. A number of typical soil profiles have been studied in the laboratory.

An area in the Loch Long district of Argyllshire is now being surveyed on the 6″ to 1 mile scale, and considerable progress has been made.

A land utilisation survey of a part of Rogart Parish, Sutherland, was carried out, paying special attention to the soils and vegetation, and a report has been drawn up.

The study of the mineralogical composition of soils and their parent materials from the East and North-East of Scotland has been continued.

An investigation of the mineral composition of the clay fraction of the soil by X-ray and optical methods is in progress.

Peat Soils.—The Land Reclamation Scheme in Lanarkshire undertaken for the Commissioner for Special Areas in Scotland has been completed during the past year. Two hundred and fifty acres of land have been fully reclaimed and large areas were either grazed or cropped during the season. Grazing was commenced early in the season and has been carried on successfully since that time. Yields of hay and silage crops were again satisfactory, the former producing from 1½ to 2 tons per acre. On a further 200 acres partial reclamation has been completed, and fairly satisfactory establishment of grass and clover seeds has been obtained in spite of the very severe winter.

Craibstone Lysimeters.—The study of the composition of the drainage waters from the soils of the Craibstone lysimeters was further advanced during the year. The crop during 1939 was pasture, which was cut and weighed at suitable intervals throughout the season. The usual collection, measurement, and analysis of the drainage waters have been continued.

Spectrographic Work.—Investigations on those materials which are present in the soil in very minute traces, and which are, nevertheless, of vital importance to the health of the plants and animals, are being carried out. The elements cobalt and boron are amongst those being studied, as they appear to be responsible for 'pining' of stock and 'heart rot' of beet respectively.

Special Investigations.—Pasture investigations which were being carried out with the Edinburgh and East of Scotland College of Agriculture on means of preventing the reversion of good pasture to poorer types have been completed, and the results are about to be published.

During the past year the survey of peat lands in Aberdeenshire has continued. The horticultural usefulness of the various types obtained is being examined, with interesting results as to the suitability of some and unsuitability of others as a medium for the growth of glass-house crops, and for composting and other horticultural purposes.

The methods of investigation of soil organic matter are under review with a view to the correlation of these with distinctions made by practical observation.

MILK RECORDS.

THIRTY-SEVENTH YEAR—RECORDS OF 41,058 COWS.

By WILLIAM STEVENSON, B.Sc., N.D.A., N.D.D., Superintendent,
The Scottish Milk Records Association.

SYSTEMATIC milk recording in Scotland was continued in 1939 under the direction of the Scottish Milk Records Association on the same lines as in 1938 and previous years. The scheme of private or unofficial milk records for unregistered herds inaugurated in 1924 was also continued during this year.

The Association in 1939 consisted of the following members:—

Name and Address.	Body Represented.
Mr Allan Barr, Hobsland, Monkton	Central and South Ayrshire Milk Recording Society (8 Circuits).
Mr Jas Cochrane, N D A, Auchincruive, Ayr	
Mr John Lockhart, Stair House, Tarbolton	
Mr William Niven, Estate Office, Sorn	
Mr William Wallace, Lyonstone, Maybole	
Mr George Templeton, Carnell Farm, Hurlford	Central Ayrshire No. 2 Milk Recording Society.
Mr Thomas Bair, Hill of Chryston, Chryston	Central Scotland Milk Recording Society (6 Circuits).
Mr A B. Bell, Bankell, Milngavie	
Mr John Cadzow, Craighead, Carluke	
Mr J. C. Lohoar, Wellshot, Cambuslang	
Mr James M'Call, The Broom, Stirling	
Mr A H. Mackie, Lochlands, Larbert	
Mr Alex. Y. Allan, Aitkenbar, Dumbarton	Dumbartonshire Milk Recording Society.
Mr James Howie, Muirside, Dumfries	Dumfriesshire Milk Recording Society (4 Circuits).
Mr John Johnstone, Millantae, Lockerbie	
Mr Robert Miller, Shawsholm, Closeburn	
Mr Mungo Sloan, Hunterhouse, Lochmaben	
Dr Chalmers Watson, Fenton Barns, Drem	East Lothian and Border Milk Recording Society.
Mr James W. Clement, East Pitkierie, Anstruther	Fife Milk Recording Society (2 Circuits).
Mr Thomas Jardine, Balmakin, Colinsburgh	
Mr Angus Matheson, Drakies, Inverness	Highland Milk Recording Society.

Name and Address.	Body Represented.
Mr Andrew Smith, Drumore, Campbeltown	Kintyre Milk Recording Society.
Mr John T. Kirkwood, B.Sc., N.D.A., Scorrieholm, Lesmahagow	Lesmahagow Milk Recording Society.
Mr John Wallace, Whitehills, Sorbie	Machars Milk Recording Society (2 Circuits).
Mr Robert Laird, Lawthorn, Irvine	North Ayrshire (John Speir) Milk Recording Society (3 Circuits).
Mr J. M. Matthew, Girthill, Saltcoats	
Mr Thomas Murdoch, West Tannacrieff, Kilmarnock	
Mr J. R. M'Caw, Douneside Home Farm, Tarland	North of Scotland Milk Recording Society (3 Circuits).
Mr Robert Howie, Flatterton, Greenock	Renfrew and Bute Milk Recording Society (2 Circuits).
Mr John Raeside, Hattrick, Kilmalcolm	
Mr Andrew M'Cartney, West Dykebar, Paisley	Renfrewshire (Upper Ward) Milk Recording Society.
Mr Andrew Cochran, High Ardwell, Kirkcolm	Rhins of Galloway Milk Recording Society (5 Circuits).
Mr John Forster, Mains of Larg, New Luce	
Mr A. M'Caig, Kilhilt, Stranraer	
Mr A. N. M'Caig, Challoch, Stranraer	
Mr J. M'Intyre, jun., Logan Mains, Ardwell	
Mr J. G. Baird, Kirkchrist, Kirkcudbright	Stewartry of Kirkcudbright Milk Recording Society (5 Circuits).
Mr George Barbour, Auchengibbert, Crocketford	
Mr John Corrie, Park of Tongland, Castle Douglas	
Mr Walter C. Crawford, Chapmanton, Castle Douglas	
Mr J. M. Gilmour, Chapelton, Borgue	
Mr A. B. Fowler, Ph.D., B.Sc., Kirkhill, Ayr	The Ayrshire Cattle Herd-Book Society of Great Britain and Ireland
Col. W. T. R. Houldsworth, Kirkbride, Maybole	
Mr James Howie, Muirside, Holywood	
Mr A. W. Montgomerie, Westburn, Cambuslang	
Mr James Kilpatrick, Craigie Mains, Kilmarnock	The British Friesian Cattle Society.
Mr A. MacIntyre, Dunallan, Rothesay	
Mr William Montgomery, North Milton, Kirkcudbright	The Highland and Agricultural Society of Scotland.
Mr John W. Prentice, Craigrie Farm, Clackmannan	
Mr James Wither, Awhirk, Stranraer	
Mr James Dunlop, Midland, Prestwick	The West of Scotland Agricultural College.
Principal W. G. R. Paterson, 6 Blythswood Square, Glasgow	
Mr William Brown, Craigton, Bishopton	
Mr A. Cunningham, D.Sc., 13 George Square, Edinburgh	The Edinburgh and East of Scotland College of Agriculture.
Mr A. M. Smith, D.Sc., 13 George Square, Edinburgh	

Name and Address.	Body Represented.
Mr Arthur R. Wannop, B.Sc., B.Eng., 41½ Union Street, Aberdeen	The North of Scotland College of Agriculture.
Professor J. Hendrick, Marischal College, Aberdeen	
Mr J. F. Tocher, D.Sc., 41½ Union Street, Aberdeen	
Mr John Forster, Mains of Larg, New Luce .	Animal Diseases Research Association.
Mr W. Cassels Jack, Robiesland, Lanark .	
Mr A. B. Fowler, Ph.D., B.Sc., Kirkhill, Ayr	The Hannah Dairy Research Institute.
Mr Norman C. Wright, M.A., Ph.D., Kirkhill, Ayr	
Lord Rowallan, Rowallan, Kilmarnock . .	Co-opted Members.
Mr John Speir, 81 Hope Street, Glasgow .	
Sir Hugh Shaw-Stewart, Bt., K.C.B., Ardgowan, Inverkip	
Lt.-Col. W. Guy Shaw-Stewart, Ardgowan, Inverkip	

Chairman—Col. W. T. R. Houldsworth.

The following were the principal members of the staff :—

Secretary and Treasurer—Mr John Howie.

Superintendent—Mr William Stevenson, B.Sc., N.D.A., N.D.D.

Assistant Superintendent—Mr Percy H. Hart.

SCHEME OF OFFICIAL MILK RECORDS.

ADMINISTRATION.

In 1939, as in previous years, the scheme of official milk records was administered by the Association through local milk recording societies. The grant from the Treasury, obtained through the Department of Agriculture for Scotland, was continued in 1939 on the same conditions as in the previous year. The amount authorised was £2900, compared with £2800 for 1938.

Grants were allocated to local societies on the following scale :—

1. Societies testing at intervals of not more than twenty-one days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.

(*b*) An annual grant of 8s. 6d. per member towards the cost of surprise check tests.

2. Societies testing at intervals of from twenty-two to twenty-eight days :—

(*a*) The hire of the necessary milk-testing appliances free of annual charge, the society to upkeep the apparatus in good condition.

(*b*) An annual grant of 7s. per member towards the cost of surprise check tests.

During the latter part of 1938 and the earlier months of 1939 every effort was made to obtain new members for local societies throughout the various dairying districts of Scotland, and 96 definite applications were received. But for various reasons, such as members disposing of their dairy herds or removing from their farms, &c., there were as usual a considerable number of resignations.

All the local societies which operated in 1938 continued in 1939. The Central and South Ayrshire Society, with seven circuits, found it necessary, owing to increase in membership, to form an eighth circuit. Also, the Dumfriesshire Society, with three circuits, had to form a fourth ; and the Machars Society, with one circuit, a second. The number of recorders' circuits in 1939 was 47, three more than in the previous year. The number of herds officially tested was 903, and the number of cows officially tested, 41,058, an increase of 32 herds and 2648 cows from the previous year, and the largest number of herds and of cows tested in the history of the Association.

The following is a list of the milk recording societies which operated in 1939, with the name and address of the Secretary of each Society :—

Name of the Society.	Secretary.
Central and South Ayrshire (8 Circuits)	Mr E. A. Bell, M.A., B.Sc., 13 Alloway Street, Ayr.
Central Ayrshire No. 2 .	Mr James Caldwell, Moorfield, Kilmarnock.
Central Scotland (6 Circuits)	Mr Arthur Gilmour, C.A., 23 Silvergrove Street, Glasgow.
Dumbartonshire . . .	Mr Robert Bilsland, Quay Place, Dumbarton.
Dumfriesshire (4 Circuits)	Messrs Henderson & Mackay, Solicitors, Lockerbie.
East Lothian and Border.	Mr A. S. Bruce, W.S., 19a Hill Street, Edinburgh.
Fife (2 Circuits) . . .	Mr F. Dow, Commercial Bank, Thornton.
Highland	Mr J. M. Hunter, Queensgate, Inverness.
Kintyre	Mr Donald Armour, Machrihanish, Campbeltown.
Lesmahagow	Mr James Hamilton, Auldtoun, Lesmahagow.
Machars (2 Circuits) . .	Mr William Christison, Barglass, Kirkinner.
North Ayrshire (John Speir) (3 Circuits)	Mr George F. F. Smith, Union Bank, Kilmarnock.
North of Scotland (3 Circuits)	Mr R. C. May, Advocate, 77 Crown Street, Aberdeen.
Renfrew and Bute (2 Circuits)	Mr Thomas Hunter, Solicitor, 35 High Street, Paisley.
Renfrewshire Upper Ward	Mr William Henderson, Glyndusk, Caplethill Road, Barrhead.
Rhins of Galloway (5 Circuits)	Mr W. Brown Moir, 8 Bridge Street, Stranraer.
Stewartry of Kirkcudbright (5 Circuits)	Mr Patrick Gifford, Solicitor, Castle Douglas.

SEASON 1939.

The following table shows for each society or circuit the number of herds, the number of cows tested, the average interval between the tests, and the duration of the recording season :—

[TABLE.

	Name of the Society or Circuit.	No. of Herds.	No. of Cows Tested.	Average Interval between Tests, in Days.	Duration of Recording Season, in Weeks.
	Central and South Ayrshire—				
1.	Ayr and District	19	728	24	52
2.	Coylton and Drongan	17	678	22	52
3.	Cumnock and District	17	635	22	52
4.	Girvan and District	17	777	22	52
5.	Kilmarnock and District	19	840	24	52
6.	Maybole and District	17	840	22	52
7.	Ochiltree and Sorn	16	539	21	52
8.	Troon and Mauchline	16	605	21	52
9.	Central Ayrshire No. 2	19	799	24	52
	Central Scotland—				
10.	Carluke and District	20	777	26	52
11.	Dunblane and District	22	797	28	52
12.	East Kilbride and District	16	925	24	52
13.	Falkirk and Linlithgow	21	657	27	52
14.	Strathaven and District	19	710	25	52
15.	Strathendrick	20	857	26	52
16.	Dumbartonshire	23	940	28	52
	Dumfriesshire—				
17.	Mid Annandale	18	768	24	52
18.	Upper Annandale	18	841	24	52
19.	Lower Nithsdale	19	784	25	52
20.	Upper Nithsdale	21	871	27	52
21.	East Lothian and Border	23	1047	28	52
	Fife—				
22.	Dunfermline and Kirkcaldy	21	891	27	52
23.	Cupar-Fife and Perth	21	856	27	52
24.	Highland	22	742	28	52
25.	Kintyre	8	365	28	52
26.	Lesmahagow	23	839	28	52
27.	Machars—No. I.	18	896	26	52
28.	,, No. II.	18	756	24	52
	North Ayrshire (John Speir)—				
29.	Fenwick	24	1106	28	52
30.	'John Speir'	25	861	28	52
31.	Stewarton and Montgomerie	22	951	28	52
	North of Scotland—				
32.	Aberdeen, Kincardine and Angus	22	896	28	52
33.	Aberdeen, Moray and Banff	20	1208	28	52
34.	Aberdeenshire	19	972	28	52
	Renfrew and Bute—				
35.	Bute	23	622	28	52
36.	Paisley and District	23	855	28	52
37.	Renfrewshire Upper Ward	12	573	28	52
	Rhins of Galloway—				
38.	Kirkcolm and District	19	1237	25	52
39.	Kirkmaiden and District	12	1135	26	52
40.	Luce Valley	18	1065	25	52
41.	Stoneykirk and District	16	1133	26	52
42.	Stranraer and District	17	1088	25	52
	Stewartry of Kirkcudbright—				
43.	Dalbeattie and New Abbey	23	1027	28	52
44.	Castle Douglas & New Galloway	19	1179	25	52
45.	Castle Douglas and District	20	1001	26	52
46.	Kirkcudbright and District	20	1163	26	52
47.	Borgue, Twynholm & Gatehouse	21	1226	27	52
	Total No.	903	41,058	...	...

DEFINITIONS.

The milk records compiled by the Association are records of the estimated quantity of milk produced by each cow in a separate lactation, and of the estimated percentage of milk fat contained in the milk. For convenience a gallon of milk is reckoned as 10 lb. A gallon of milk of average quality weighs almost exactly 10⅓ lb. The following further particulars concerning each record were also given wherever possible :—

Name of cow, byre number, and herd-book number.
Sire of cow and herd-book number of sire.
Dam of cow and herd-book number of dam.
Date of birth.
Date of calving preceding opening of record.
Number of weeks in milk.
Date of calving after record closed.

The following particulars of the preceding record were appended to each record, where available :—

Date of calving preceding opening of record.
Quantity of milk in gallons.
Percentage of fat in milk.
Number of weeks in milk.

The milk yields were estimated in respect of quantity and milk-fat percentage from the results of systematic periodic tests by trained recorders approved by the Association. The recorders visited the farms for this purpose at intervals varying from twenty-one to twenty-eight days, and each day of visit was regarded as the middle day of the period covered by the test. Milk records estimated in this way approximate closely to the actual milk yields.

METHOD OF RECORDING—OFFICIAL RECORDS.

A distinctive feature of milk recording in Scotland in 1939, as in previous years, was that the official records were entirely the work of trained official recorders. Recorders had previously to undergo a special course of training in milk recording at the West of Scotland Agricultural College, or other approved College of Agriculture. Only candidates of good character and good general education were selected to attend these courses ; and all recorders, before appointment, were approved by the Executive Committee of the Association.

All dairy farmers taking advantage of the Association's scheme were arranged into Local Milk Recording Societies employing one or more recorders, the Executive Committee having the power to transfer members from one local society to another, in order to find accommodation for new applicants, and at the same time avoid overlapping of recorders' circuits.

Each local society applying to the Association for licence to conduct milk recording under the Association's scheme signed the form containing the Association's rules and regulations, and agreed to conform to these rules. The local society selected and appointed their recorder or recorders from the list of approved recorders obtained from the Association. Apparatus, chemicals, sheets, and books were selected and arranged for by the Association, all byre sheets and record books used by the recorders being supplied free of charge. Thus uniformity of method was, as far as possible, assured.

The official recorder visited each herd at intervals of not more than twenty-eight days, or more usually from twenty to twenty-six days. He, or she, arrived at the farm in the afternoon, usually by means of a small pony and trap provided by the local society for the purpose, or by motor-car, and was accommodated at the farm overnight. All cows giving milk in each herd, as far as was possible, were included in the records. Each cow was clearly distinguished in the byre by a stall number on the wall, immediately in front of and above the level of the cow, and registered animals were also indelibly tattooed on the ears with distinctive registered tattoo markings. The cows were milked in the same rotation, evening and morning, on the occasion of the recorder's visit. The recorder weighed and sampled the milk of each cow in the evening, noting the time at which each cow was milked, and entered the results in the corresponding columns in the byre sheet, taking up a position in the byre as near to the milkers as possible, so as to have them in full view, and, as far as practicable, receiving the milk direct from the milker at the cow's side. He again weighed and sampled the milk of each cow in a similar manner in the morning, and entered the results in the byre sheets. He then tested the mixed evening and morning proportionate sample for each cow by the Gerber method for percentage of milk fat. He entered in the byre sheet any unusual conditions likely to affect the milk yields. The recorder was required to see that all milk samples and byre sheets were securely locked up overnight or during his absence. From the daily results the recorder calculated and completed the byre sheets, multiplying the yields by the exact number of days which had elapsed since the last test, but so calculating throughout that each day of visit was regarded as the middle day of the period covered by the test. Special ready-reckoners were used to facilitate calculating and to ensure greater accuracy.

The byre sheets were written out in duplicate. The principal copies were posted at regular intervals to the office of the Association, and the second copies left with the respective members. The recorder transferred the results from the extended byre sheets to the milk record book for the herd indelibly in ink, each cow being assigned a separate page, at the top of which full particulars of the cow were entered, including the indelible tattoo marks on the animal.

The byre sheets were carefully revised and corrected in the Association's office during the season, and a list of the necessary corrections sent to each recorder periodically to be entered in the record books.

Visits of inspection were made to each recorder and to the members of local societies at the different farms periodically throughout the year by members of the Association's staff, and reports thereon submitted to the Executive Committee. The Executive Committee reserved the right to withdraw approval of any recorder at any time, or to limit the period of service of any recorder with any particular society. Members of local societies refusing to observe any of the rules of the Association, or deemed to be guilty of conduct injurious to the true interests of milk recording, were liable to be temporarily or permanently suspended.

Another distinctive feature was the surprise check tests, the records of each herd being checked in this way about two times throughout the year. The recorder was instructed, by a letter from the superintendent on a date unknown to recorder and owner of herd, to remain at the same farm another day and make another complete twenty-four hours' test. The surprise test results were entered on special buff-coloured byre sheets, and in the record books in red ink immediately below the results of the regular test of the previous day. The buff byre sheets were posted to the Association's office with the other sheets, and any abnormal differences were immediately noted and were reported to the Executive Committee.

As a result of this system of surprise check tests, each page of the 1939 milk record books contains entries in red, comparison of which with the immediately preceding entries provides valuable evidence as to the genuineness of the milk records.

In addition to the surprise check tests made by the recorder, a number of independent surprise tests were made by the Association's staff in order to check the recorder's work. A number of surprise re-tests of the milk samples already tested by the recorder were also carried out; for this purpose recorders were instructed to retain the milk samples each morning till ten o'clock.

All records were closed at the end of December, the current lactations being carried forward to the new books of the following year. Finally, summary sheets were written out in duplicate showing the total milk yield for each cow for the lactation or part lactation, with full particulars of the cow, dates of calving, &c. The principal copy of the summary sheet was posted to the Association's office with the record book, and the second copy left with the owner of the herd.

All record books and summary sheets were carefully revised, corrected in detail, and initialled in the Association's office during the next few months, the record books being returned later to the respective members, and the summary sheets retained and bound for future reference.

The milk records were next classified into three groups for cows and heifers respectively on the following basis. Experience has confirmed the view that the most useful comparison is obtained by reckoning the yields in terms of pure butter fat. Such a comparison takes into consideration both the quantity and the quality of the milk.

Cows with a milk record equivalent to not less than 280 lb. of butter fat, and heifers with a milk record equivalent to not less than 224 lb. of butter fat, were grouped into Class I. Cows and heifers with milk records of less than two-thirds of these amounts—viz., 186 and 149 lb. of butter fat respectively—were grouped into Class III.

The following short table shows the corresponding values of these yields in fairly good milk of 3·5 per cent milk fat :—

Class.	Yield of Butter Fat. (Lb.)	Corresponding Yield in Milk of 3·5 per cent Fat. (Gallons.)
Cows in Class I. . .	Not less than 280 .	800
Heifers in Class I. .	Not less than 224 .	640
Cows in Class III. .	Less than 186 . .	531
Heifers in Class III. .	Less than 149 . .	426

All cows and heifers with milk yields falling between these limits would come into Class II. Such animals naturally claim less attention than the good milkers or the obviously unprofitable animals. It should be noted, however, that Class II. would include a certain number of unclassifiable yields, as there were a number of cases where, from various causes, the results of a whole normal lactation could not be obtained.

It should be noted that while the above standards for classification of milk yields are the same as for 1934 onwards, they are higher than those formerly adopted, in the proportion of 280 lb. of butter fat for a Class I. cow to the former standard of 250 lb., the other standards bearing the same relation as formerly to the cow Class I. standard. This decision of the Executive Committee brought the Class I. standard for cows and heifers respectively into line with those adopted since 1924 for the Association's Annual Register of High-yielding Cows. This subject was dealt with more fully in the 1934 report under "General Review."

It should always be kept in mind when making a comparison of cows in different herds or in different districts that the different methods of dairying practised have a considerable influence on the milk yields, and that therefore milk yields alone do not necessarily indicate the true relative inherent or hereditary milking qualities of the animal. But the authenticated milk records compiled by the Association are of inestimable value to breeders and owners of dairy cows if properly interpreted.

Review—Official Records.

Recording was carried on in 1939 by 47 local societies or circuits, comprising 903 members. The number of cows tested in 1939 was 41,058, compared with 38,410 in 1938, and was the largest number officially tested in the history of the Association.

During the year 25 recorders, for various reasons, terminated their engagements. The Executive Committee, however, in the same period approved of 47 applicants for the position of milk recorder, and were able to recommend a sufficient number of qualified recorders. Nine women recorders were employed in 1939 and 58 men recorders. In this connection the Committee are indebted to the West of Scotland Agricultural College for giving special courses of instruction for milk recorders to meet the Association's requirements. Two special courses were required in 1939, one in June and the other in November. Forty selected candidates attended, and 29 obtained the certificate.

The Executive Committee purchased the supplies of milk-testing apparatus, sulphuric acid, and amylic alcohol for local societies, as in previous years.

The system of surprise check tests, introduced in 1920, was continued in 1939. The total number of check tests made by recorders during the season was 1056. In no instance in 1939 was the average milk yield for the herd more than 3 lb. milk daily less on the occasion of a check test as compared with the previous day. Only one herd showed an average of over 2 lb. less. In addition to the surprise tests arranged for and carried out by the recorders, the assistant superintendent made 74 special check tests of different herds. The results in most instances agreed very closely in regard both to average milk yields and fat percentages with those of the recorders' previous tests. Only one herd showed an average daily yield of over 2 lb. less on the occasion of a special check test, and no herd had an average of over 2 lb. more. With regard to average fat percentages, only one herd showed an average fat percentage of over ·2 per cent lower, and one herd an average of over ·2 per cent higher. With the exception of 2 herds, the average fat percentages were all within ·2 of those obtained by the recorders at the previous tests.

With regard to the general conditions for milk production in 1939, the weather throughout March was cold, wet, and stormy. There was a fine and warm spell in the second week of April; during the rest of the month the weather was rather cold and fairly dry, with some night frosts. The cold and dry weather continued during the earlier weeks of May, but the last week was very warm, and growth then advanced rapidly. More rain was, however, required to increase the growth of all crops. During the first week of June the weather was extremely hot, and throughout the month in all districts it was exceptionally dry, some areas experiencing the severest drought for many years. Crops generally made poor progress, and a more copious rainfall was urgently needed to promote growth. Weather conditions during July were unsettled. Heavy rains fell in most districts, which seriously interfered with haymaking and other farm work. Considerable damage was caused to the hay crop, and in many places the grain crops were laid by the heavy rains. Taking the country as a whole, however, the soil required the moisture, which was generally beneficial to the grain, potato and root crops, to pastures and to live stock. The first week of August was warm and calm, with thunder showers. After a fine spell in the middle of the month conditions were close and sunless in the east, but clearer in the west. In some areas plentiful sunshine promoted the ripening of the grain crops, and allowed cutting to be carried on rapidly; in others ripening and cutting were retarded by damp conditions. September was also generally dry and warm, favourable for harvest operations and beneficial for most crops and live stock. In some areas lack of rain prevented the normal development of pastures and root crops. On the whole, however, the weather conditions in September were very good. The weather in most parts of Scotland during October was fine and dry, and favourable for progress with all kinds of agricultural work.

Grasses and clovers were healthy and vigorous in most districts at the end of April, but growth had been slow owing to cold weather and night frosts, and at the end of May was not up to that of an average season. Cutting of hay was in progress by the end of June in almost all districts. Clover was reported to be less abundant in the hay than usual. Unfavourable weather during July made the task of securing it difficult and protracted. Later cuttings were almost everywhere much damaged by rain. In practically all districts the yield of hay was below normal, estimated deficiencies ranging according to district from 5 per cent to as much as 40 per cent. Pastures were very bare and making little growth by the end of March, and were still in backward condition three months later, being greatly in need of moisture;

but they improved rapidly during July with the coming of rain, and continued fresh and abundant during the remainder of the grazing season. The sowing of turnips and swedes was well forward or completed in most districts by the end of May. Early sowings brairded rapidly and made satisfactory progress; but later sowings suffered more from lack of moisture, and much resowing had to be undertaken. In many districts the crop was very irregular, and on the whole the yield was much below average. The swedes appear to have withstood the drought better than yellow turnips.

In the case of recorded herds, other conditions militated against a higher average milk yield. As in recent years, a considerable proportion of herds which had been recorded for a period of years were entirely dispersed, or for other reasons already referred to did not continue to be recorded, while an unusually large number of 'new herds,' or herds tested for not more than three years, were included. The proportion of regular milk record herds was thereby correspondingly reduced. Also an unusually large proportion of recorded herds were in process of being 'cleaned up' with regard to tuberculosis.

The following table shows for each society or circuit the number and percentage of cows and heifers of each class in 1939:—

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
Central and South Ayrshire—					
1. Ayr and District	728	493	20	71	3*
2. Coylton and Drongan	678	446	20	68	3*
3. Cumnock and District	635	465	8	73	1
4. Girvan and District	777	574	19	74	2
5. Kilmarnock and District	840	580	11	71	1*
6. Maybole and District	840	529	31	65	4*
7. Ochiltree and Sorn	539	431	6	80	1
8. Troon and Mauchline	605	411	11	68	2
9. Central Ayrshire No. 2	799	612	12	77	2
Central Scotland—					
10. Carluke and District	777	535	29	71	4*
11. Dunblane and District	797	524	13	72	2*
12. East Kilbride and District	925	556	44	60	5
13. Falkirk and Linlithgow	657	462	11	70	2
14. Strathaven and District	710	355	30	51	4
15. Strathendrick	857	429	22	56	3*
16. Dumbartonshire	940	612	32	67	3*
Dumfriesshire—					
17. Mid Annandale	768	443	34	58	4
18. Upper Annandale	841	477	47	57	6
19. Lower Nithsdale	784	512	33	66	4*
20. Upper Nithsdale	871	562	36	67	4*

Society or Circuit.	Cows and Heifers.				
	Number.			Per Cent.	
	Total.	Class I.	Class III.	Class I.	Class III.
21. East Lothian and Border	1047	603	60	58	6*
Fife—					
22. Dunfermline and Kirkcaldy	891	580	21	65	2
23. Cupar-Fife and Perth	856	575	22	67	3
24. Highland	742	471	21	66	3*
25. Kintyre	365	143	13	58	5*
26. Lesmahagow	839	602	28	72	3
27. Machars—No. I.	896	335	101	39	12*
28. „ No. II.	756	286	62	40	9*
North Ayrshire (John Speir)—					
29. Fenwick	1106	670	24	63	2*
30. 'John Speir'	861	502	31	58	4
31. Stewarton and Montgomerie	951	637	21	70	2*
North of Scotland—					
32. Aberdeen, Kincardine and Angus	896	530	20	62	2*
33. Aberdeen, Moray and Banff	1208	553	55	51	5*
34. Aberdeenshire	972	608	37	65	4*
Renfrew and Bute—					
35. Bute	622	353	17	60	3*
36. Paisley and District	855	467	39	55	5*
37. Renfrewshire Upper Ward	573	297	35	52	6
Rhins of Galloway—					
38. Kirkcolm and District	1237	604	120	49	10
39. Kirkmaiden and District	1135	645	78	57	7
40. Luce Valley	1065	538	87	51	8*
41. Stoneykirk and District	1133	512	113	45	10
42. Stranraer and District	1088	528	63	49	6
Stewartry of Kirkcudbright—					
43. Dalbeattie and New Abbey	1027	473	86	48	9*
44. Castle Douglas and New Galloway	1179	666	54	57	5
45. Castle Douglas and District	1001	444	90	44	9
46. Kirkcudbright and District	1163	569	91	49	8
47. Borgue, Twynholm and Gatehouse	1226	578	67	48	6*
Of all the cows and heifers tested in 1939	41,058	23,777	1925	59¼	4¾*
Comparison with 1938	38,410	23,240	1253	62¼	3¼*
Comparison with 1937	37,549	22,471	1307	62½	3½*
Comparison with 1936	36,211	22,564	1051	64¼	3*
Comparison with 1935	34,872	20,567	1200	61	3½*
Comparison with 1934	32,905	20,164	998	63	3*
Comparison with 1933	32,456	19,631	1061	62	3¼*

Excluding herds tested during only a part of the recording season—973 cows in 1939.

Reviewing the results of the 47 circuits as a whole, we find that, classifying on the new higher standards, of the total of 41,058 cows and heifers tested in 1939, excluding 973 animals in herds tested during only a part of the season, and therefore not classified, 23,777 were included in Class I. and 1925 in Class III. This is equivalent to 59¼ per cent in Class I. and 4¾ per cent in Class III. Thus, 59¼ per cent of all the cows and heifers tested gave a milk yield equivalent to not less than 800 gallons containing 3·5 per cent milk fat in the case of a cow and 640 gallons in the case of a heifer; while only 4¾ per cent gave a milk yield equivalent to less than 531 gallons containing 3·5 per cent milk fat in the case of a cow and 426 gallons in the case of a heifer.

The following table shows a comparison of the average results from 1914 to 1935 inclusive. For this comparison the milk records were classified on the lower standards adopted in previous years :—

Year.	Cows and Heifers.		
	Total Number Tested.	Per Cent.	
		Class I.	Class III.
1935	34,872	73	2
1934	32,905	75½	1½
1933	32,456	75	1¼
1932	31,415	72½	1½
1931	30,576	72¼	1½
1930	30,720	70	1¼
1929	30,898	68	1¾
1928	30,293	66	2⅛
1927	29,459	65¾	2¾
1926	29,236	65½	2¾
1925	28,410	60	5
1924	27,957	65	3
1923	26,952	65	2
1922	27,275	63	2
1921	26,752	58¾	4
1920	24,191	55¼	3¼
1919	20,786	49½	4½
1918	17,827	49	5⅛
1917	19,564	50	4¾
1916	22,702	53¼	4¾
1915	26,572	46	6
1914	26,424	39½	9

The average standard attained in 1939 was undoubtedly lowered by the inclusion of the larger proportion of 'new herds,' and by other adverse conditions already referred to, including drought in summer and scarcity of feeding-stuffs in autumn and winter, yet it will be observed from the preceding table that the proportion of animals qualifying for inclusion in Class I. in 1939 is only 5 per cent lower than that of 1936—namely, 64¼ per cent, which, taking into consideration the higher standards now adopted, is the highest reached since the commencement of official milk recording thirty-six years ago.

It will be observed also that when classified on the lower standards previously adopted, the proportion of Class I. cows and heifers to the total animals tested increased from 39½ per cent in 1914 to 75½ per cent in 1934, while the proportion of Class III., or obviously unprofitable, animals was reduced in the same period from 9 per cent to 1½ per cent. These figures indicate great improvement in recorded herds, yet do not represent the full extent of the progress made since the introduction of milk recording in 1903. It is estimated that milk record herds generally are at the present time giving higher average yields than unrecorded herds to the extent of considerably over 200 gallons per cow per annum.

Improvement from milk recording is not confined to herds officially recorded in 1939. A very much larger number have been tested and recorded for longer or shorter periods since the Association's scheme of milk recording was introduced. And when we consider the spread or diffusion of the benefits arising directly or indirectly from milk recording, we find that these penetrate widely in various directions other than that of individual members of milk recording societies. For example, there is the effect on the remaining dairy herds of the country. The wide dissemination annually of milk record stock bulls and milk record cows for breeding purposes among untested herds alone must exercise an incalculable improving influence on a very large number of these herds. Such influence is increasing with the extension of the practice of using only milk record bulls in dairy herds.

There is also the powerful educational influence and force of example permeating and leavening the whole mass of dairy farmers. If a census could be taken in this connection, it would probably be found that a considerable proportion of herd owners outside the membership of milk recording societies are in one way or another testing and recording the milk yields of their herds who would never have done so had systematic or official milk recording not been in operation. The same consideration applies to the more enlightened methods of selecting, breeding, and feeding on milk record lines which have been adopted in many herds not officially recorded.

There is another direction in which advantage from milk recording is penetrating widely beyond the ranks of milk recording societies. Increased efficiency in the production of milk lowers the cost to the urban populations, and some portion of the return from milk recording is handed on beyond the actual milk producers.

There remains a still wider aspect of the question. Large numbers of milk record bulls and young cows are exported annually, and go to maintain and improve the milking qualities of the dairy herds of the Empire.

The Association's activities are not confined to the official testing and recording of the individual milk yields, but are directed also to assisting the herd owners to improve their methods of production by means of the records obtained. The work is to some extent of an educative or advisory nature. Official recorders have to attend a course of instruction which includes the feeding and general management of the dairy herd, and are required to do all they can to interest and advise members in this connection. The Association have prepared and issued to all members a concise practical guide to feeding of dairy cows, containing a table of fifteen selected food mixtures adapted to different conditions, and recorders and central staff take every opportunity of assisting members to follow the instructions given therein.

SCHEME OF PRIVATE OR UNOFFICIAL MILK RECORDS.

The Association's scheme of private or unofficial milk records, inaugurated in 1924, was continued in 1939 on the same lines as in previous years. The chief objects are to establish milk recording on a wider and more popular basis, and to induce a greater number ultimately to adopt the system of official authenticated milk records.

Milk recording under this scheme was administered directly by the Association. The following inducements were offered to members :—

(*a*) The hire of a set of appliances for testing purposes free of annual charge, the member to upkeep the apparatus in good condition.

(*b*) Byre sheets and record books free of charge, with stamped addressed envelopes for return of byre sheets.

(*c*) All calculations in byre sheets and record books to be made in the Association's office, and the sheets and record books to be returned to the herd owners duly extended and completed.

(*d*) The total charge on members to be limited to an annual subscription to the Association at the rate of 1s. per cow tested.

Nine new members were enrolled for 1939. Five of the members were transferred to the scheme of official recording. The total membership for 1939 was 69, and the total number of cows included 1776. This new scheme of recording had at the end of 1939 been the means of obtaining for official recording 73 new members of a very desirable type, which is one of the objects for which it was promoted.

There are several reasons why the membership under this scheme has not increased in recent years. The better milking herds are gradually transferred to official records. At the other extremity there are a considerable proportion of poor herds, the owners of which are evidently unduly discouraged by the low yields recorded, and apparently have not the mentality to appreciate the possibilities of effecting the much-needed improvement. Also, a number of members, after two or three years' experience, believe they can carry on recording on similar lines independently at smaller cost.

This scheme of unofficial recording has served a useful purpose. For reasons already given, its effect must not be measured merely by the number of herds included in any particular year; account must be taken of its educational influence and propaganda value. Thus a considerable proportion of the members who have withdrawn, and meantime severed their connection with the Association, have acquired the milk recording point of view, and ought ultimately to be found among members of milk recording societies. No fewer than 452 herd owners have been initiated in milk recording through its operation.

The following is a brief outline of the method of recording adopted :—

All cows in the herd yielding milk must be included in the record. Each cow must be clearly distinguished in the byre by a stall number on the wall. On the occasion of a test the cows must be milked in the same rotation evening and morning, and care must be taken that the milk of each cow for twenty-four hours, and for twenty-four hours only, is included in the test. The owner, or his agent, is required to weigh the milk of each cow evening and next morning by means of the spring balance and pail provided, once every twenty-one to twenty-eight days, and to enter the results and other necessary particulars in the byre sheet provided by the Association; and each byre sheet must be signed by the owner, or on his behalf, as correct in respect of all entries made. The byre sheet is sent by first post to the superintendent, and calculated and extended by the Association's staff, and returned to the owner as soon as completed. A milk record book for each herd is written out in the Association's office. The record books are closed at the end of the recording season as at 30th November, and the results summarised and entered in special summary sheets. The record books and copies of the summary sheets, when completed and checked, are sent to the respective owners of the herds.

It must, of course, be clearly understood that the milk records compiled under this scheme are purely unofficial unauthenticated records, and have no connection with the official authenticated milk records of the Association. But from letters received and opinions expressed by members, it is evident that very useful guidance may be obtained from the records.

PROSPECTS FOR MILK RECORDING.

The immediate prospects for the Association's schemes of milk recording have become deeply overshadowed by the war, which broke out on 3rd September. Throughout the last Great War, 1914-1918, milk recording was carried on in Scotland without a break, as work of national importance in home food production, and the State grant in aid was continued, and considerably increased each successive year as costs generally advanced. A gradual change over from men to women recorders, as the former left for military service, was effected without any very appreciable effect on the efficiency of the recording. But as shortage of skilled dairy farm labour developed and scarcity of cattle feeding-stuffs became acute, and other difficulties directly or indirectly due to war conditions increased, the total membership of milk recording societies fell considerably year by year, till at the end of the war in 1918 it stood at approximately only two-thirds. The administrative staff, however, was maintained at practically full strength, and fully authenticated milk records were obtained throughout. The whole organisation was kept unimpaired, and ready for the rapid expansion which took place after the war ended.

A somewhat similar experience was naturally expected during this war, though it was hoped that as milk recording was now more firmly established in a larger number of Scottish dairy herds the drop in membership would be relatively smaller. Last time many members of local societies decided and arranged to discontinue milk recording for the duration of the war before it was definitely known that milk recording would be kept going and officially recognised as work of national importance in the emergency. On this occasion, however, steps were immediately taken to advise all members in advance to continue milk recording unabated, as a war measure.

Then came a 'bombshell' from London. The Ministry of Agriculture intimated that the exchequer grant in aid of milk recording in England and Wales would be suspended as from 31st October 1939, on grounds of economy in State expenditure and conservation of administrative staff for more essential war services; though officially the work was still considered of national importance in time of war. The farmers were urged to continue a scheme of milk recording on as extensive a scale as possible on the basis of self-support. Though this attitude of the Ministry to milk recording was strongly protested against by the local societies through the Central Council of Milk Recording Societies in England and Wales, and the matter at a later stage was discussed in the House of Lords, the Government adhered to their decision.

Subsequently a modified scheme of milk recording for war-time for England and Wales was decided upon, and put into operation, assisted by grants from the principal dairy breed societies. Among other changes, with a view to economy in working, the number of official inspection tests was reduced by one-half—namely, from tests at intervals of six weeks to tests at intervals of twelve weeks; and only four butter fat tests in the year were made necessary.

This experience in England at once raised a similar difficulty in an acute form in Scotland, and assurance was immediately sought in official quarters that the State grant in aid of milk recording in Scotland would be continued. Differences in the two systems of milk recording were strongly urged as reasons for continuing the grant in Scotland. For instance, the recording dairy farmers in England were already fully equipped individually with milk-weighing apparatus and experienced for carrying on a system of semi-official milk recording at relatively small expense, while in Scotland this was not so. The strongest representations were made to the Department of Agriculture for Scotland, and a deputation from the Executive Committee was received by the Department. But evidently the position in Scotland had already been compromised by the English decision. The best result that could be obtained was that the grant in Scotland would be continued till 31st March 1940, the end of the financial year for which a grant had already been approved. As in England, the members in Scotland were urged to continue a scheme of milk recording on a self-supporting basis.

The Executive Committee carefully and anxiously considered the whole position in view of the withdrawal of State aid. They decided to continue the scheme of official milk recording during the war years, and to adhere to the present system as closely as possible so far as finance would permit, making every effort to maintain the position already so successfully built up. But they found it would not be possible to obtain contributions from the local societies sufficient to meet the cost of the present administration. They, therefore, felt compelled to adopt a scheme of retrenchment and re-organisation in staffing. As a result of this decision important control services are to be dispensed with, and a severe reduction is also to be effected in the clerical staff. Control of recording and checking of results must necessarily be correspondingly relaxed; which raises misgivings in the minds of many thoughtful persons having the true interests of authenticated milk recording at heart. This, however, represented a serious effort on the part of the Committee to continue with a useful scheme of milk recording at the lowest possible cost to members during the difficult times ahead.

The Association have been fortunate in obtaining a grant at the rate of £500 per year from the Ayrshire Cattle Herd-Book Society, and a grant of £100 for 1940 from the British Friesian Cattle Society. The balance of the total cost to the Association of operating the scheme will require to be met by an additional levy on members of milk recording societies.

Efforts similar to those of previous years were made to obtain new members for local societies in 1940. The Attested Herds Scheme is undoubtedly proving a great aid in this connection. The number of new members for official records for season 1940 obtained to date is 49, as compared with 96 at the same date for the previous year.

All the local societies of 1939 have continued, but the number of recorders' circuits has been reduced by six. The Rhins of Galloway Society reduced their circuits from five to three, the Dumfriesshire Society from four to three, the Central and South Ayrshire Society from eight to six, and the Central Scotland Society from six to five. In most of these instances, however, the reason was not so much reduction in members as the desire for economy in working. The number of recorders' circuits in 1940 is 41, as compared with 47 in the previous year. The total number of herds being officially recorded at the end of March is 850, as compared with 903 for 1939; but the total number of cows tested may show more than a corresponding reduction. This result for the first year of war may be considered satisfactory under the conditions existing.

Owing to war conditions, an unusually large number of changes in recorders was only to be expected. The younger men have been, and are being, called up for military service according to age groups. But suitable women recorders had already been trained to take their places. All vacancies to date have been filled, and there remain a sufficient number of approved recorders on the waiting list. So long as women recorders of a suitable type continue to be available no great difficulty in recorder staffing need be anticipated; when the latter is fully established on a war footing, largely with women recorders, few more than the normal replacements should be required.

The Committee have also been able to arrange for the necessary supplies for local societies of sulphuric acid, amylic alcohol, and milk-testing apparatus for 1940, though for all these items somewhat increased prices will require to be paid.

With regard to unofficial milk records, in order to effect the severe reduction in cost of administrative services that was deemed necessary, it was decided to discontinue this scheme for the duration of the war. It is gratifying, however, to find that the greater proportion of the members have purchased the milk-weighing apparatus previously loaned to them by the Association, with a view to carrying on milk recording privately in their own herds, and that a number of the other members have joined local milk recording societies and commenced official recording.

Systematic milk recording, or herd-testing as it is termed in some countries, has undoubtedly proved of great value to the dairy farmers in Scotland and elsewhere who have regularly practised it. There is no need to elaborate this point at the present day. Effective as it is in peace-time, there is even more need to maintain and extend the practice in time of war, to ensure, as far as possible, that the dairy cows kept produce milk in sufficient quantity and in the most economical manner.

Milk recording enables a dairy farmer to progress by the three main avenues: (1) thorough weeding; (2) economic feeding and more efficient management generally; (3) skilful breeding. The first two of these are of particular importance at all times, but even more so in time of war. Special difficulties to be surmounted will be shortage and high cost of suitable cattle feeding-stuffs and of efficient dairy farm labour. Under these conditions the dairy farmer will still consider he is better off with empty stalls than with cows producing for him a loss. Thus, he will wish, more than ever, to eliminate unprofitable cows from his herd. But skilful breeding for milk production, in the light of the milk records obtained, is no less important, as a well directed effort to increase the proportion of good-milking cows in the cows that are kept. A reduction in the total number of dairy cows in the country is, for various reasons, almost inevitable in years of war, and such reduction will fall to be made good by worth-while cows when peace returns.

ANALYSES FOR MEMBERS DURING 1939.

By Dr J. F. TOCHER, Aberdeen, Analyst to the Society.

THE samples analysed during 1939 included the common fertilisers, feeding-stuffs, waters, milks, stomach contents for poisons, feeding-stuffs for poisons, and some samples of an unusual character.

FERTILISERS.

By far the greatest number of fertilisers examined were compound fertilisers. The others examined included superphosphate, basic slag, ground and shell lime, potash, and miscellaneous samples, including hop manures. I have found that over a number of years the proportions of compound fertilisers used are for turnips, 40 per cent; for cereals, 30 per cent; for potatoes, 15 per cent; and for grass, 15 per cent. All the samples of compound fertilisers analysed were found to conform to the guarantees given. This year a large number of samples was unspecified, but potato fertilisers head the list. Here are five typical examples :—

TABLE I.—POTATO FERTILISERS.

No.	Nitrogen.	Sol. Phos. Acid.	Insol. Phos. Acid.	Potash.
1	8·64	7·04	1·67	7·84
2	8·66	7·01	1·21	9·40
3	8·65	7·07	1·72	7·71
4	8·72	7·11	1·01	9·21
5	5·03	6·52	2·09	9·92

Complete analyses were made of two samples labelled "Shell Lime," with the undernoted results :—

TABLE II.

No.	Calcium Oxide (Caustic Lime).	Magnesium Carbonate.	Silicates.	Iron, &c.	Carbonates.	Water.
1	60·50	0·66	9·98	3·30	7·36	..
	Calcium Hydroxide (Slaked Lime).					
2	40·03	0·32	3·45	2·20	24·50	29·50

The results of sample No. 1 show it to be a genuine sample of shell lime. No. 2 contained 29·5 per cent of water, and it is evident the lime had been slaked. The sample contained too high a proportion of carbonates for a shell lime.

The proportions of calcium oxide (caustic lime) found in samples of ground lime and shell lime were as follows :—

TABLE III.

No.	Caustic Lime.	No.	Caustic Lime.
1	77·62	5	85·25
2	69·88	6	91·93
3	83·75	7	85·54
4	76·75		

From the above it will be seen that the proportions of caustic lime varied from 69 to 92 per cent, due to the source of the lime.

A sample of slag was found to be finely ground, 88·50 per cent of the powder passing through the standard sieve. The total phosphoric acid was found to be 15·70 per cent, of which 15 per cent was citric soluble. The superphosphate was found to contain 19·18 per cent soluble phosphoric acid. The hop manures contained very small proportions of fertilising constituents, but high percentages of organic matter, varying from 52 to 60 per cent. The average proportions of fertilising constituents were nitrogen, 1·20 per cent ; soluble phosphoric acid, 0·5 per cent ; and potash, 1·0 per cent. The samples were, therefore, low in ordinary fertilising constituents, but contained high proportions of humus which was valuable to the soil to which the material was applied.

The average composition of the compound fertilisers analysed was found to be 5·11 per cent nitrogen ; 6·97 per cent soluble phosphoric acid ; 3·51 per cent insoluble phosphoric acid ; and 7·21 per cent potash. The proportion of nitrogen varied from 2·0 to 8·7 per cent ; soluble phosphoric acid varied from 3·8 to 10·7 per cent ; insoluble phosphoric acid varied from 1·0 to 9·2 per cent ; while the proportion of potash varied from 2·4 to 13·7 per cent. The following table (Table IV.) shows the results of analyses of samples of compound fertilisers analysed during the year.

[TABLE IV.

TABLE IV.

	Nitrogen.	Soluble phosphoric acid.	Insoluble phosphoric acid.	Potash.
Potato Manure	8·64	7·04	1·67	7·84
,, ,, ...	8·66	7·00	1·21	9·40
,, ,, ...	8·66	7·07	1·72	7·71
,, ,, ...	8·72	7·11	1·01	9·21
,, ,, ...	5·03	6·52	2·09	9·92
,, ,, ...	5·56	..	..	6·97
,, ,, ...	4·94	..	..	4·89
,, ,, ...	5·88	..	..	8·04
,, ,, ...	6·46	4·58	3·94	10·40
,, ,, ...	6·13	6·42	3·34	10·05
,, ,, (Special) .	6·83	8·79	2·13	5·94
Turnip ,, ...	2·50	9·65	2·26	2·68
,, ,, ...	2·00	7·62	9·19	4·38
Compound ,, (Unspecified) .	4·90	6·49	4·65	5·92
,, ,, ,, .	5·03	8·71	4·35	4·86
,, ,, ,, .	3·68	7·75	1·47	13·69
,, ,, ,, .	4·69	5·48	2·24	10·21
,, ,, ,, .	2·83	4·89	5·52	5·67
,, ,, ,, .	2·91	4·94	4·96	5·89
,, ,, ,, .	2·79	3·80	5·57	6·76
,, ,, ,, .	3·84	6·59	3·48	10·62
,, ,, ,, .	3·28	10·68	5·24	2·45
,, ,, ,, .	3·56	8·25	4·19	2·43

FEEDING-STUFFS.

A sample designated as "Feeding Stuff Powder" was found to contain proportions of constituents such as fat, albuminoids, sugar and ash, indicating that the sample was a skimmed milk powder. In the Society's Schedule of Unit Prices for February 1939 skimmed milk powder was given as worth £20 per ton. I pointed out to the member who asked for the analysis that the sample was not worth the figure quoted. Two samples of meat and bone meal contained oil to the extent of 11·5 and 16 per cent, and albuminoids to the extent of 46 and 60 per cent respectively. It is natural to expect that such a feeding-stuff as meat and bone meal should show considerable variation in the proportions of the constituents owing to the feeding-stuff being derived from a waste product. The limits of variation in the proportions of oil, albuminoids, and phosphoric acid in meat and bone meal are given in the Fertilisers and Feeding Stuffs Act, 1928. The allowance as a deviation from the statutory statement in the case of oil, albuminoids, and phosphoric acid is one-tenth of the guarantee. The samples analysed were satisfactory from the point of view of the prescribed limits of variation.

The following table (Table V.) shows the proportions of the nutritive constituents found in the undernoted feeding-stuffs. It will be seen that blood meal contains the highest proportion of albuminoids, followed by extracted herring meal—that is, meal from which most of the oil has been extracted.

TABLE V.

Name of Feeding-stuff.	Oil.	Albuminoids.	Phosphor acid.
White Fish Meal	3·0	64·0	8·0
Extracted Whale Meal	3·0	66·0	9·0
Extracted Herring Meal	1·1	77·1	3·9
Blood Meal	1·0	86·0	0·3
Meat and Bone Meal	14·0	40·0	14·0
Linseed Cake	8·0	28·0	1·8
Cotton Seed Cake	4·5	22·0	2·5
Extracted Soya Bean Meal	0·5	45·0	2·3
Steamed Bone Flour	..	..	30·0

White fish meal contains a fairly constant amount of phosphoric acid, round about 8 per cent.

A number of samples of pig meal was analysed. The proportion of oil varied from 3 to 3·5 per cent; albuminoids varied from 11·8 to 17·97 per cent; while fibre varied from 4 to 6·5 per cent. All the samples were satisfactory samples of pig meal. The following table (Table VI.) gives two examples of mixtures suitable for pig feeding. White fish meal is used in one case, while in the other case linseed cake and extracted soya bean meal replace the white fish meal:—

TABLE VI.

RATION No. 1.		RATION No. 2.	
Flaked Maize	25 lb.	Flaked Maize	20 lb.
Barley Meal	35 „	Barley Meal	28 „
Weatings	10 „	Weatings	20 „
Bean Meal	20 „	Bean Meal	10 „
White Fish Meal	10 „	Linseed Cake	10 „
	—	Extracted Soya Bean Meal	10 „
	100 „	Mineral Mixture	2 „
			—
			100 „

The samples of feeding-stuffs analysed during the year included the usual compound cakes and meals, dairy meals, poultry meals, and meat and bone meal.

The following table (Table VII.) shows the composition of other feeding-stuffs analysed :—

TABLE VII.

	Oil.	Albuminoids.	Phos. acid.			
Meat and bone meal .	16·33	46·25	11·29	..	..	..
" " " .	12·23	50·25	10·79	..	..	..
" " " .	10·68	45·94	13·18	..	..	..
" " " .	11·45	60·00	7·84	..	..	..
				Mineral matter.	Lactose.	Moisture.
" Concentrate . .	15·52	56·87	..	11·85	..	9·27
Feeding-stuff powder .	1·24	22·77	..	6·57	55·28	..
			Soluble carbohydrates.	Fibre.	Ash.	
Compound fattening cake	4·93	17·37	48·01	8·25	6·87	14·57
Cake	4·35	18·06	..	7·85	..	11·33
Mash	3·78	15·38	..	4·00	..	..
"	2·76	16·06	..	2·76	..	..
Poultry mash . .	3·65	12·50	..	4·29	..	..
Bigegg mash . .	3·74	13·88	..	3·97	..	..
Growers mash . .	6·10	13·56	..	6·14	..	..
Poultry meal . .	2·52	12·31	60·59	8·38	3·50	12·70
Crushed linseed . .	37·18	..	..	..	..	..
Barley bran . . .	3·30	10·03	56·01	15·17	3·87	11·62
Malt parings . .	3·03	12·84	64·61	5·93	3·62	9·97
Pig meal	3·11	15·62	..	5·97	..	..
" "	3·22	15·87	..	6·45	..	..
" "	3·45	14·84	..	3·93	..	..
" "	3·48	14·93	59·26	5·23	4·87	12·23
" "	2·55	14·56	..	2·77	..	..
" "	3·08	15·50	..	2·93	..	..
" "	3·26	15·94	..	2·63	..	..
" "	3·25	15·25	..	3·37	5·77	..
" "	1·83	11·81	..	3·79	3·97	..
" "	2·93	17·97	..	4·39	..	..

MILKS.

The number of samples found to be below the prescribed presumptive limit in butter-fat was two as against five last year. The proportions of fat in the samples varied from 1·50 to 7·65 per cent, while that of solids-not-fat varied from 8·52 to 9·08 per cent. Four samples were analysed for both fat and solids-not-fat, while the other samples were analysed for fat only. The following table (Table VIII.) gives the results of analyses of the four samples which were sent in for complete analysis :—

TABLE VIII.

No.	Fat, per cent.	Solids-not-fat, per cent.	No.	Fat, per cent.	Solids-not-fat, per cent.
1	2·85	8·53	3	3·30	8·57
2	3·72	8·52	4	1·50	9·08

The number of samples of milk found to be below the prescribed presumptive limits in butter-fat and solids-not-fat are decreasing in certain areas, due to the efforts of Milk Marketing Boards, which prescribe in their contracts and licences, standards of butter-fat higher than 3 per cent. The law, however, relating to the sale of milk by retail still in force is " The Sale of Milk Regulations, 1901." I had these Regulations in mind when I spoke at the Half-Yearly Meeting of the Society in June. My remarks were confined to samples of poor milk low in butter-fat and solids-not-fat percentages, and had no relation to the importation of dairy cows examined by experts in exporting countries in order to prove freedom from disease. Irish and Canadian cattle imported to this country are examined, both at departure and arrival, for health purposes. Only those free from clinical evidence of tuberculosis and mastitis are allowed to pass on to the markets. In view of these facts it is, I think, desirable that commercial dairy cows bred in this country and *offered for sale* in this country should undergo at least an examination from the point of view of quality of milk prior to sale. In due course examination for health purposes could also be included. The powers of the Ministry of Agriculture are now very wide, but do not include the testing for butter-fat and solids-not-fat of the milk of commercial dairy cows offered for sale. Members are reminded that milk can be sold in Scotland under four grades, but there is no compulsion on the part of producers to supply these grades, which are "Certified," "Tuberculin Tested," "Standard," and "Pasteurised." (See the Milk (Special Designations) Order (Scotland), 1936.)

The number of producers in Scotland under this Order is increasing, with the result that clean milk is increasing and the quality of milk has also improved. Since the law regarding the quality as against the purity of milk has not been changed since 1901, I can only express my regret that, despite the recommendations made by the " Interdepartmental Committee Milk, Scotland, 1922," no attempt has been made to change the law. We can expect no change during the war, but I hope that when peace comes this problem will be considered by Parliament. My view has always been that the presumptive limits regarding quality should be abolished, thus removing the onus on the seller to prove that the milk sold by him is genuine. There has always been a tendency to regard these Milk Regulations as setting up a standard of quality and making it an offence to sell milk containing less than 3 per cent of fat and 8·5 per cent of solids-not-fat. It will, however, be quite clear, to anyone who considers them impartially, that they have not this effect. The Regulations do not create an offence, but merely alter the law of evidence, so that when any sample of milk is found to contain less than the specified percentage of milk fat and solids-not-fat the onus of proof is shifted from the prosecution to the defence, and, instead of the prosecution having to prove that the milk is not as it came from the cow, the person charged must prove that it is as it came from the cow.

WATERS.

The proportion of samples of water of good quality was 53 per cent, and 47 per cent were of bad quality, either due to the presence of sewage or to the presence of lead, copper, and zinc. In two cases iron was found to be present in sufficient quantity to render the water unsuitable for domestic use. Samples were examined for the action of water on metal piping. One sample was found to possess the property known as temporary hardness due to the presence of 17·4 parts per 100,000 parts, equal to 12·2 grains per gallon, of bicarbonate of lime. A temporary hard water can be softened by boiling, but, in large supplies, special treatment is necessary. Another sample was found to be unsuitable for domestic use owing to the presence of a fungus which was identified. Treatment of the supply was recommended in order to eliminate the fungus. When trouble of this kind occurs, the best thing to do is to clarify the liquid by means of a controlled addition of lime and alumino-ferric in a tank previous to the entry of the water to a series of settling tanks.

POISONS.

During the year a large number of samples of the contents of stomachs and alimentary canals and feeding-stuffs were sent in for analysis for poisons. In two cases arsenic was found to be the cause of death of heifers. Arsenic was also found to be the cause of death of a number of sheep. Lead was found in abundance in the stomach of a cow and in the stomachs of two heifers. Eight samples of feeding-stuffs were examined for poisons, with negative results. The samples sent me in connection with suspected poisoning of stock were sometimes inadequate in amount, and occasionally portions of the rumen and other parts of the alimentary canal were sent in without any contents.

MISCELLANEOUS.

A chemical, described by chemists as a glucoside capable of yielding prussic acid, is known to be present in wild white clover. The results of analyses of samples sent me showed that the proportion of prussic acid developed is very minute when compared with the yield from linseed cake, which is now known with great accuracy. The average proportion found by me was 0·014 per cent. Quite likely it is a useful ingredient in clover. Investigations have been carried out at various centres abroad and in this country which show a seasonal variation in the glucosidal content, the maximum amount of prussic acid developed amounting to only 0·015 per cent, or about one grain to a pound of clover.

Ground mineral phosphate is of great use as a fertiliser. This fertiliser contains varying proportions of fluorine. In my opinion ground mineral phosphate should not be used as a phosphatic supplement in a ration. Other sources of phosphates are available where the proportion of fluorine is minute. Fluorine is found in very small proportions in foods, including milk, and plants where no danger to health is likely to occur.

The results of analyses of two samples of sheep dip show that they conform to the Regulations of the Ministry of Agriculture. It is, however, easy to buy a standard dip. Difficulties arise when the dips are diluted for use. Dilutions have been found which are stronger than those prescribed by the Ministry. These may be due to neglecting the instructions given by the manufacturers. Quite a number of cases of arsenical poisoning of sheep have occurred, and I have reported these to the Ministry, with suggestions which, if adopted, would greatly reduce the mortality of sheep due to poisoning.

SCOTTISH RED CROSS AGRICULTURE FUND.

By JOHN STIRTON, Hon. Secretary and Treasurer.

IN January 1940 the Society received an invitation to send a representative to a Meeting in London of the Red Cross Agriculture Fund Committee. The invitation was signed by the Lord Mayor and by Sir Charles J. H. Thomas, Chairman of the Committee. A similar invitation was received by the National Farmers' Union and Chamber of Agriculture of Scotland, the Scottish Branch of the Chartered Surveyors' Institution, the Scottish Farm Servants' Union, and the Institute of Scottish Auctioneers. Representatives of the first three bodies mentioned attended the Meeting, which was held at the Mansion House, London, on 12th January.

THE LORD MAYOR'S FUND.

It was explained that it had been arranged that, during the present war, there should be one appeal throughout the whole of Great Britain on behalf of the British Red Cross, the Scottish effort being united with the appeal for funds being organised from the Mansion House under the designation of the Lord Mayor's Red Cross and St John Fund. The Executive Committee of that fund had invited a Committee to assume responsibility for activities undertaken on behalf of the fund by the agricultural community and allied industries. A Committee with that object had been formed in England under the name of the Red Cross Agriculture Fund Committee. At the Meeting of that Committee in London on 12th January a Resolution was passed to the effect that the Scottish Branch of the British Red Cross Society be invited to form an Agriculture Committee in Scotland.

INVITATION TO FORM SCOTTISH COMMITTEE.

On 5th February a letter was received from the Scottish Branch, British Red Cross Society, inviting the Highland and Agricultural Society to take the initiative in forming an Agriculture Committee and organising the scheme for Scotland. The Directors agreed to accept the invitation, and to do their utmost to make the scheme a success.

In the meantime, they received an application from the St Andrew's Ambulance Association to be allowed to participate in the fund. It was pointed out that this would place the St Andrew's Association in the same position in relation to the fund in Scotland as that occupied by the St John

Ambulance Association in England. This request was readily acceded to, both by the Directors and by the Scottish Branch of the British Red Cross Society.

Careful consideration was given to the best method of starting the movement, and it was decided to call a Meeting of representatives of bodies in Scotland connected with agriculture and allied industries. The invitation was restricted, in the first instance, to national bodies, in order to limit the size of the Committee. While the invitations were restricted to national bodies, it was felt that, in the matter of raising money, the Committee would be largely dependent on the goodwill and cordial co-operation of Local Agricultural Societies throughout the country.

The bodies invited to send representatives included the Department of Agriculture for Scotland, the National Farmers' Union and Chamber of Agriculture of Scotland, the Scottish Farm Servants' Union, the Institute of Auctioneers and Appraisers in Scotland, the Chartered Surveyors' Institution, the Scottish Land and Property Federation, the various Live Stock Breed Societies, the Corn, Meat, Potato, and Wool Trade Associations, Forestry and Horticultural Societies, the Scottish Association of Young Farmers' Clubs, the Scottish Beekeepers' Association, the International Sheep Dog Trials Society, the Scottish Agricultural Machinery Association, and the various Agricultural and Veterinary Colleges.

MEETING OF REPRESENTATIVES OF AGRICULTURAL BODIES.

The Meeting was held in the Society's Chambers, Edinburgh, on Wednesday, 17th April, and was largely attended, practically every body mentioned being represented. In addition, there were present, representing the Scottish Branch, British Red Cross Society, Major-General Sir Walter Maxwell-Scott, Bt., C.B., D.S.O., Vice-Chairman, Mr R. J. Smith, C.B.E., and Major J. M. Mitchell, O.B.E., Deputy Secretary, and representing the St Andrew's Ambulance Association, the Duke of Buccleuch, G.C.V.O., President, Colonel D. J. Mackintosh, C.B., M.V.O., D.L., and Mr James H. H. Henderson, Secretary.

The Chair was taken by Major R. F. Brebner, The Leuchold, Dalmeny, Chairman of Directors of the Highland and Agricultural Society. In extending a welcome to those present, the Chairman expressed the thanks of the Directors of the Society for the very representative response to their invitation to attend the meeting. They had a very good representation of the interests of agriculture at that meeting, and he felt sure that they would be able to organise matters so as to raise a very satisfactory sum for the Red Cross and the St Andrew's Ambulance Association.

The meeting had been called, he said, at an opportune time, in view of the turn the war had then taken. Up till that date, the demands of the Red Cross and the St Andrew's Ambulance Association had perhaps not been so great as was expected, but it must be realised that before the end of hostilities there would be a considerable call upon the services of these Associations, and he was sure agriculture in Scotland would not be behindhand in making an effort to provide a considerable sum of money for the Red Cross.

Major-General Sir Walter Maxwell-Scott, Bt., described the activities of the Scottish Branch of the British Red Cross Society. In the last war the Scottish Branch expended over £2,000,000. They had 600 ambulances at home and abroad, and carried over 2,000,000 people, and they equipped a Hospital Ship for the Mediterranean. Since the last war the Red Cross had spent in Scotland £260,000, including £120,000 on hospital treatment for ex-service men, £20,000 on sanatorium treatment for officers, and £50,000 on emergency help to service men. Since the beginning of the present war £38,000 had been spent by their Central Fund. This sum included a grant of £3000 in money to the Finnish Red Cross, and, in addition, they had given them goods to the value of over £3000.

After giving details of the present personnel and equipment of the Society, he referred to the work of the County Branches, which all had their own funds. Whatever money was received through the Agriculture Fund would be divided 50-50 with the counties, so that a considerable proportion of the money received from a county would be spent within its area.

Mr James H. H. Henderson, General Secretary of the St Andrew's Ambulance Association, gave a brief account of the work of that Association, dealing more especially with what they were doing to help His Majesty's Forces in connection with transport work and with the instruction of personnel.

Mr J. M. Ramsay, O.B.E., of the Department of Agriculture for Scotland, expressed the deep regret of the Secretary of State for Scotland that he was unable, on account of his Parliamentary duties, to attend the Meeting. The cause they were considering, said Mr Ramsay, was one that must appeal to everybody. The bringing together of the Scottish Agricultural Organisations in a united effort to assist the Red Cross Fund had the entire sympathy and support of Mr Colville.

The Chairman then moved the following Resolution :—

> "That the representatives of the Organisations present constitute themselves the General Committee of the Scottish Red Cross Agriculture Fund, with power to add to their number. That the Committee have as its object the raising of funds on behalf of the Red Cross and St Andrew's Ambulance Association from the Agricultural interests in Scotland."

Mr William Graham, Lugate, Stow, President of the National Farmers' Union and Chamber of Agriculture of Scotland, seconded the Resolution. In doing so, he said it needed no words of his to commend the cause to which the Resolution referred. He was perfectly sure Scottish agriculture would not wish to lag behind in an effort made on behalf of that fund. He thought it would be agreed that the organisation they proposed to set up for the collection of funds would be an ideal organisation for the purpose.

THE WORK OF COUNTY COMMITTEES.

Some doubts were expressed as to the advisability of setting up a new organisation in view of its possible effect on the work of the Red Cross County Committees, and also upon the proposed scheme for regular weekly contributions from farm workers.

The Chairman said they felt that there were sources of income which had not been tapped by the appeals of the Conveners in the various counties, and that this organisation could raise money from these untapped sources. He was sure they all realised that in a war they had to give not only once or twice or even three times, but had to put their hands in their pockets all the time for all the various funds. He thought that by organising Free Gift Sales, particularly in the country districts, they would be able to raise money for the Red Cross without interfering in any way with the local efforts for comforts and other funds. Where a scheme for regular collections was in operation the work of the Committee would not interfere with it. The work of the proposed organisation would be in addition to the local efforts, all of which would be required.

The Resolution was then put to the Meeting, and unanimously adopted.

ELECTION OF OFFICE-BEARERS.

The Earl of Home, K.T., was unanimously elected Chairman of the General Committee. In moving his election, Major Brebner said that Lord Home undertook a great deal of public work, but, when approached, he had readily agreed to accept the Chairmanship. They were extremely fortunate in having him to guide this movement.

Major R. F. Brebner and Mr George G. Mercer, Southfield, Dalkeith, were elected Vice-Chairmen of the Committee, and Mr John Stirton, Secretary of the Highland and Agricultural Society, was elected Honorary Secretary and Treasurer.

It was intimated by Major Brebner that the Directors of the Highland and Agricultural Society had decided to offer office accommodation for the Committee and to permit the

Society's Secretary and staff to undertake duties, if so desired, on behalf of the Committee. The offer was gratefully accepted.

SUB-COMMITTEES APPOINTED.

An Executive Committee of twenty-five members was then appointed, and also an Allocation Committee, consisting of the Chairman, two Vice-Chairmen, and one representative each from the Red Cross and the St Andrew's Ambulance Association, to decide as to the allocation between the Scottish Branch, British Red Cross, and the St Andrew's Ambulance Association of the funds raised by the Committee.

AREA COMMITTEES.

It was left to the Executive Committee to proceed with the establishment of Local Committees in the different areas throughout Scotland. It was thought that these areas might be generally on the lines of the Highland Society's Show Divisions. The Committees would include Directors of the Highland Society and representatives of the Executive Committees of the National Farmers' Union and Chamber of Agriculture within the areas, representatives within the areas of those bodies represented at that Meeting, and representatives of all Agricultural Associations and other similar bodies within the areas.

Major Brebner explained that there were eight Show Divisions throughout Scotland. What they had in mind was that the representatives of the Highland Society and of the National Farmers' Union and Chamber of Agriculture in each Division should have a preliminary meeting, to which they would invite representatives of all Agricultural Societies, Auctioneers, and representatives of the other agricultural interests in the area, with a view to proceeding to organise the scheme.

Further, it was hoped that all the bodies represented at that Meeting, especially those connected with allied industries, would formulate schemes for raising money within their own industries or associations.

LOCAL ORGANISATION.

Since the Meeting above referred to steps have been taken to establish the necessary Committees throughout the Show Divisions. In this work the National Farmers' Union and Chamber of Agriculture are cordially co-operating through their Local Executive Committees. All Local Agricultural Societies throughout Scotland have been communicated with, and the replies received indicate a general desire to be associated with the scheme and a willingness to do everything in their power to further its success.

THE CEREAL AND OTHER CROPS OF SCOTLAND FOR 1939.

THE following comparison of the cereal and other crops of 1939 with those of the previous year has been prepared by the Secretary of the Society from answers to queries sent to leading agriculturists in different parts of the country.

The queries issued by the Secretary were in the following terms :—

1. What was the quantity, per imperial acre, and quality of grain and straw, as compared with last year, of the following crops ? The quantity of each crop to be stated in bushels or cwts. What quantity of seed is generally sown per acre ?—(1) Wheat, (2) Barley, (3) Oats.
2. Did the harvest begin at the usual time, or did it begin before or after the usual time ? and if so, how long ?
3. What was the quantity, per imperial acre, and quality of the hay crop, as compared with last year, both as regards ryegrass and clover respectively ? The quantity to be stated in tons and cwts.
4. Was the meadow hay crop more or less productive than last year ?
5. What was the yield of the potato crop, per imperial acre, as compared with last year ? The quantity to be stated in tons and cwts. Was there any disease ? and if so, to what extent, and when did it commence ? Were any new varieties planted, and with what result ?
6. What was the weight of the turnip crop, per imperial acre, and the quality, as compared with last year ? The weight of the turnip crop to be stated in tons and cwts. How did the crop braird ? Was more than one sowing required ? and why ?
7. Were the crops injured by insects ? State the kinds of insects. Was the damage greater or less than usual ?
8. Were the crops injured by weeds ? State the kinds of weeds. Was the damage greater or less than usual ?
9. Were the pastures during the season of average growth and quality with last year ?
10. How did stock thrive on them ?
11. Have cattle and sheep been free from disease ?
12. What was the quality of the clip of wool, and was it over or under the average ?

From the answers received, the following notes and statistics have been compiled :—

EDINBURGH DISTRICT.

MID-LOTHIAN. *Wheat*—50 bushels per acre; most satisfactory cereal crop of the season; straw 45 cwt. per acre; seed sown, 3½ bushels per acre; October sown wheat, 3 bushels per acre, if put in with drill. *Barley*—48 bushels per acre; quality of grain very good, but some areas affected in colour by wet weather while in stook; straw, 25 cwt. per acre; seed sown, 3 bushels per acre. *Oats*—56 bushels per acre; grain lacking in plumpness and, in consequence, lighter weight per bushel; straw, 30 cwt per acre; seed sown, 5 bushels per acre. *Harvest*—Earlier than usual and, in the earlier or lowland district, of short duration; later districts rather protracted on account of wet weather. *Hay*—Lighter crop than usual; 2 tons per acre; affected by severe drought in May. *Meadow Hay*—Very little grown; crop also light. *Potatoes*—5 tons per acre; suffered from mid-summer drought, and certain varieties affected by green-fly during August. *Turnips*—15 tons per acre; easterly district suffered very much from ravages of green-fly after a good braird; in many instances a complete failure. *Insects*—Turnip crop affected by green-fly; much more damage than usual. *Weeds*—Crops very free from weeds; season admirably suited for their destruction. *Pastures*—Suffered from summer drought. *Live Stock*—Throve very well where not too heavily stocked, and were freer from disease than usual. *Clip of Wool*—Average and of good quality.

WEST LOTHIAN. *Wheat*—Autumn sown, 36 to 42 bushels per acre; spring sown, 28 to 32 bushels per acre; grain and straw of moderate quality; large acreage of spring wheat sown owing to the exceptionally wet weather during autumn and winter; seed sown, 3 to 3½ bushels per acre, drilled; broadcast, 4 bushels per acre. *Barley*—32 to 40 bushels per acre; seed sown, 3½ to 4 bushels per acre; disappointing crop, owing to wet seed-time followed by cold drought; easily 25 per cent below average; grain of fair quality; straw of short and soft quality. *Oats*—40 to 60 bushels per acre; grain and straw of poor quality; seed sown, 4½ to 6 bushels per acre, according to variety. *Harvest*—Began about the usual time in close weather; owing to the lack of drying winds considerable damage was done in the stook to all grain crops, especially oats, which discoloured badly; the weather improved towards the middle of September and continued good, giving harvest a quick finish. *Hay*—30 to 40 cwt. per acre; a poor crop secured in good order; quality fair. *Meadow Hay*—Very little grown, practically a failure. *Potatoes*—Earlies, 10 to 12 tons ware per acre; lates, 9 to 11 tons ware per acre; lates fully 2 tons per acre better than last year, especially on the heavier type of land, which suited the dry weather; the only crop in the county up to average. *Turnips*—A fair crop where sown early; 20 to 25 tons per acre; when sown after the middle of May practically a failure; although some very late sown, which brairded about the end of June, made rapid growth, but bulbed very poorly. *Insects*—Very little damage done. *Weeds*—Turnips long in brairding almost choked out by weeds; mostly annuals. *Pastures*—The worst growth for years; where eaten down in the spring they never recovered. *Live Stock*—Throve fairly well on bare pastures, and were comparatively free from disease. *Clip of Wool*—Average quality and clip.

East Lothian (Upper). *Wheat*—Yield of grain similar to that of last year, 44 to 52 bushels per acre; both grain and straw harvested in fair condition, slightly darkened by fog during harvesting; seed sown, 3½ to 4 bushels per acre. *Barley*—Yield of grain rather better than last year, 46 to 56 bushels per acre; straw rather lighter; grain and straw harvested in good condition; seed sown, 3 to 3½ bushels per acre. *Oats*—54 to 66 bushels per acre; yield of grain and straw under that of last year; in many cases grain darkened by fog during harvest, but some good seed samples; seed sown, 4 to 5½ bushels per acre. *Harvest*—Started same time as last season; with the exception of a few foggy days was a good and speedy harvest. *Hay*—Under average crop owing to dry weather in May and early June, but secured in good condition; 40 to 48 cwt. per acre. *Meadow Hay*—Very little grown. *Potatoes*—Slightly under average crop; 7 to 9½ tons per acre; lifted and stored in good condition, ten days earlier than usual; very little blight; rather more leaf curl and virus diseases, especially in 'Majestics'; very little sprain. *Turnips*—Again a light and variable crop; came to the hoe rather late, and in patches; a good deal of finger-and-toe and dry-rot; crop, 14 to 16 tons per acre; some odd cases of second sowing; more mangolds being grown every year, even along the hill-foots; good crops were secured. *Insects*—Some considerable damage caused amongst turnips; rather more than previous year. *Weeds*—Annual weeds not so troublesome owing to the drier season; thistles worse than usual in pasture fields. *Pastures*—Came away early in spring, and grazed well all season; fully average growth. *Live Stock*—Both cattle and sheep grazed well and were free of disease. *Clip of Wool*—Average.

East Lothian (Lower). *Wheat*—Yield was fairly good; average about 48 bushels per acre; straw about 36 cwt. per acre; the wheat crop was secured in good condition; seed sown, 3 to 4 bushels per acre. *Barley*—Rather under average in yield and suffered some damage in colour, particularly in coastal areas, both before being cut and in the stook, but the bulk of the crop was stacked in good condition; yield variable, 48 to 64 bushels per acre; straw short; prices started after harvest at previous year's low level of 40s. per quarter, but rose to a peak of 85s. for the best samples and then declined to from 60s. to 70s.; seed sown, about 3 bushels per acre. *Oats*—Yield under average and quality disappointing, the grain not being well filled; threshings of good crops mostly ranged between 60 and 80 bushels per acre; the straw was well under average; seed sown, 4 to 6 bushels per acre according to variety. *Harvest*—Commenced about the usual time and was slow at the outset owing to damp weather, but, later, weather on the whole was favourable, and the crops were secured in good order in reasonable time. *Hay*—Quite an average crop of 50 to 60 cwt. per acre, which was got in good condition; second crop, where cut, was also good, the yield being in many cases over 20 cwt. per acre. *Meadow Hay*—None made. *Potatoes*—Yield well under average;

owing to drought and adverse weather the early potatoes were light, and for the same reason late varieties did not grow into bulky crops; 7 to 8 tons per acre reckoned good; in the western part of the country a bad infestation of green-fly greatly reduced yields; blight, on the other hand, was not bad and was kept in check by spraying. *Turnips*—The turnip crop (mostly swedes) in this part of the country has become a very difficult and disappointing one owing to the continued ravages of the swede midge; turnip growers are being driven more and more to try mangolds; but neither were very successful, the weather being unfavourable in the early part of the season, with the result that root crops were light and variable, and swedes unstored were further seriously damaged by prolonged very severe frost in January and February. *Insects*—The outstanding infestations of insects were the swede midge on turnips and green-fly on potatoes and other vegetable crops; the damage to swedes was about equal to the serious damage of recent years; the infestation of green-fly was exceptionally bad in the area affected. *Weeds*—Injury was about normal, especially in view of the difficulty of securing casual labour; charlock in grain crops and charlock and other annual weeds in green crops were the chief troubles, but the weather was favourable for keeping them in check by horse labour. *Pastures*—During the season were of average growth and quality. *Live Stock*—Throve well, and cattle and sheep were free from disease. *Clip of Wool*—About average.

BORDER DISTRICT.

BERWICKSHIRE (Merse). *Wheat*—A total acreage of 6795 showed a slight reduction from the previous year, accounted for partly by a wet season at seeding-time and recent improving prospects for barley; with little to check them, brairds were good and well forward by early spring, which had been remarkably mild; the usual seeding was 3½ to 4 bushels per acre; ears made their appearance by 20th June, harvest commencing before the end of August, when the crop was generally standing; it cut well and was well got—all millable; yields at 46 bushels per acre were good, if not up to 1938; natural weight of grain, 63 lb. per bushel; straw, 26 to 32 cwt. per acre. *Barley*—Was sown early in fine order; at 10,038 acres showed a slight rise on top of the previous year's increase; usual seeding, 2½ to 3 bushels per acre, drilled; brairds came away regularly, and looked very well for a while; drought and frosts in May checked growth, when it lost colour and the rows opened up; a good recovery was made by the end of June, and strong ears appeared early in July. The crop was somewhat laid by harvest-time, but the chief trouble at harvest was the abnormally strong growth of clovers; with weather conditions uncertain and very quiet stooks required extra handling; cutting commenced about the third week in August, and the crop was eventually secured without damage; yields were good up to and over 48 bushels; natural weight, 53½ lb. per bushel; straw, 25 cwt. per acre. *Oats*—Were sown earlier than usual as land and weather conditions were favourable; unfortunately, the early sowing brought much of the crop into a dull quiet spell of weather at harvest, so that the earlier fields suffered to some extent; like barley, the braird was checked in May, which subsequently appeared to have more effect on the grain as the quality was not up to the usual standard; 5 bushels per acre was the usual seeding, now invariably treated with a mercurial dressing; ears appeared by mid-June, and harvest commenced before mid-August—early for the district; cutting took some little time, as crops generally were heavy, and stooks had to be moved two or three times owing to the close, damp weather; yields were fair, varying very much, as is usual, some stated to be up to and over 80 bushels per acre; natural weight low, at 42 lb. per bushel; and straw anything from 26 to 35 cwt. per acre. *Harvest*—As already stated, began early with oats, and not too well, but finished up in reasonable time and generally good, except that much of the oat crop sample was blackened; more speed could have been made if the labour had been available, but owing to the outbreak of war our casual Irish hands departed for home when most required. *Hay*—With a shortage of grass all spring fields intended for hay were late in being cleared of ewes and lambs; in consequence, the crop had a short time to make good, and was a light one, about 26 cwt. per acre; conditions were reasonably good and, as a whole, the crop was well secured, with a fine show of clover; a total acreage of 12,722 shows, most unfortunately as things proved, a further reduction for the year of some 700 acres. *Meadow Hay*—Condition very similar to above; the crop was short, as was the acreage, and much has had to be purchased since the new year. *Potatoes*—Land was in fine working order at planting-time, and plants showed up quickly; a lack of moisture all season affected the tonnage, and prospects did not look too good in June; there was little or no disease; pitting was carried out satisfactorily and, apart from slight damage by frost, there was little waste in the pits; the acreage showed a slight fall at 2339 acres, and the crop was below average at 6 tons per acre; spraying was not general and, as a rule, only the better known varieties were grown. *Turnips*—The acreage at 13,545 showed a reduction on 1938 of some 700 acres; sowings commenced in April, earlier than usual, with a fine tilth secured, but the ground was very dry and brairds came irregularly; plants hung a long time, frost and fly doing serious damage and much land having to be resown; it was well into June before the soil got a sufficient wetting to set plants right away; dry conditions later affected the crop, and mildew was very prevalent, the drills opening up badly; later growth was good, though yellows never made up leeway, and finished moderately at well under 20 tons per acre; swedes grew to a good average at 26 to 30 tons per acre, and were very sound; unfortunately, owing to the severe winter, much was wasted; *mangolds*, now extensively grown, lifted a heavy crop, kept well and proved most valuable in spring, while kale left over for spring use was largely wasted by frost or eaten by pigeons. *Insects*—No damage other than by the turnip beetle; no recurrence of the swede moth. *Weeds*—Conditions were favourable in spring and early summer for checking annuals; the creeping thistle, as usual, was much in evidence in pasture fields. *Pastures*—Were forward early in the year, but dry conditions and frost—we had frost every night the latter part of May and first half of June—checked growth, and by June fields were not only bare, but becoming burnt up; subsequently things improved, and foggages proved to be very good, while after harvest the young seeds stood a lot of eating, by which time there was some roughage for autumn use. *Live Stock*—Sheep stocks did quite well despite, and perhaps on account of, the shortage of grass, which, however, was too bare for cattle at the beginning of the grazing period; the fall of lambs was below average, and mortality amongst ewes before and after lambing was heavy; by sale-time lambs were barely average quality; at first, met a fair trade, but trade fell away badly owing chiefly to the indefinite guidance from the Ministry; for the same cause draft ewes were exceedingly badly sold, and flockmasters suffered severe financial loss; grass-fed cattle, on the other hand, under partial control, were more liberally treated; the stock kept free from disease. *Clip of Wool*—Was above average quality, but the international situation affected the trade, which opened very badly at a price which could not be accepted; things imprdved slightly by August, and on the outbreak of war the Ministry requisitioned all wools. *Sugar Beet*—A rather lessened acreage at 585 proved one of the best returns, if not the best, growers in the area have ever had for the crop; tonnage good, with a high percentage of sugar content; tare was light with the first loadings, but latterly the land became too wet to make satisfactory work with lifting; undoubtedly a greater acreage would be grown if the necessary labour were available.

BERWICKSHIRE (Lammermoor). *Wheat*—About the same acreage grown as last year; yield and general growth of the crop better than last year; yield about 32 to 36 bushels per acre. *Barley*—Rather more appeared to have been grown in the district than during the last few years; yield fully average, and quality of grain on the whole good for the district; seed sown, 3 to 3½ bushels per acre. *Oats*—The main white crop of the district; average crop for yield, with much less laid corn than for several years; seed sown, 4 to 5 bushels per acre. *Harvest*—Started at the usual time; weather conditions, on the whole, were good, very different from last year; the bulk of the crop was stacked with the minimum of delay. *Hay*—Average yield; secured in fairly good condition. *Meadow Hay*—Also about average yield; secured in much better condition than last year. *Potatoes*—This crop looked remarkably well all summer; was harvested in good weather, and the yield seemed well up to or over the average; not much disease in evidence. *Turnips*—Early sown fields did remarkably well during the most of summer; in autumn, however, some fields suffered from the dry conditions and showed a considerable amount of mildew; some late sown fields brairded badly and never came to much of a crop; on the whole, both swedes and yellows an average crop. *Weeds*—Owing to the fairly dry conditions during the summer weeds were easier to keep in check than in the previous year; thistles in pasture fields were less troublesome than usual. *Insects*—Not more troublesome than in former years. *Pastures*—Up to average growth, and of better quality than last year. *Live Stock*—Throve well, and were fairly free from disease. *Clip of Wool*—Average.

ROXBURGHSHIRE. *Wheat*—About the normal acreage grown; tendency has been to sow wheat on old lea ploughed up; results have been very variable; autumn sown wheat often thinned out to a poor crop; on the whole, spring seems the best time to sow after old lea. *Barley*—Showed less variation in yield where the crop was at all good; the quality was mostly good, and yields of 40 to 48 bushels per acre were average. *Oats*—Did not produce the usual bulk of straw, but in most cases the yield was quite satisfactory; the straw was of good quality for fodder; the grain also was mostly plump and good. *Harvest*—Was quite early, and the later districts were fully earlier than usual in comparison with the others; except in the very earliest districts where the weather was bad to start with conditions were exceptionally good. *Hay*—Was a light crop, but of very good quality and well got. *Meadow Hay*—Was a moderate crop of good quality and well got. *Potatoes*—The yield good all over, with very little disease and a high percentage of ware. *Turnips*—About an average crop, with fewer bad fields either from disease or bad brairding; unfortunately, an abnormal wastage was caused by the severe frost both in pits and in particular to crops left growing. *Insects*—Not much damage caused. *Weeds*—Less trouble than usual recorded. *Pastures*—First year's grass was in many cases very badly planted and gave poor results; other pastures about average. *Live Stock*—Did well in general, especially later in the season; lambs in many cases suffered badly from worms; other diseases about normal. *Clip of Wool*—About average in weight and quality.

SELKIRKSHIRE. *Wheat*—None grown. *Barley*—Very little grown. *Oats*—Despite the wet spring sowing was completed by the end of April, and oats secured a good seed-bed; thin-skinned oats brairded well, but the thick-skinned varieties came thin, due to the long spell of dry weather and lack of moisture; seed sown, 5 to 6 bushels per acre; there was a marked shortage of straw, but grain threshed well; yield, from 35 to 44 bushels per acre. *Harvest*—Commenced a week earlier than the previous year and, with a standing crop and fine weather, was secured in excellent condition. *Hay*—A poor crop, owing to the continuous drought in May and June; secured in fairly good condition, but bulk probably one-third less than usual. *Meadow Hay*—For the same reason was a poor crop, but secured in fairly good condition; yield, about two-thirds of the average. *Potatoes*—Were a good crop, free of disease, and lifted in fine dry condition; 7 to 8 tons per acre; Kerr's Pink was the most popular variety. *Turnips*—Were a very disappointing crop, and not the usual size; those sown before the middle of May brairded well and came quickly to the hoe, but those put in at the latter end of May 'hung fire' for about eight weeks, when the rain came, and consequently they did not mature properly; yield, 15 tons per acre; dry-rot and finger-and-toe prevalent, even on land which was limed, which gave rise to the suspicion that the seed was infected. *Weeds*—No serious injury by weeds, but crops greatly damaged by wood-pigeons. *Pastures*—Fairly good throughout the season. *Live Stock*—Throve quite well, and were generally free from disease, except for the usual calving and lambing troubles. *Clip of Wool*—Average and of excellent quality.

PEEBLESSHIRE. *Wheat*—A very small acreage grown, and only a fair crop. *Barley*—Not extensively grown; yield, from 38 to 42 bushels per acre. *Oats*—Taken all over, not such a heavy crop as in the previous year, and in many cases ripened unequally; good land on an average 56 to 64 bushels per acre; poorer land from 24 to

40 bushels per acre; straw after green crop below the average. *Harvest*—Began much about the usual time; the first cut corn was very slow to lead on account of the muggy, raw weather; the late farms got a good harvest. *Hay*—Ryegrass was a very disappointing crop where eaten by sheep in the early spring; on the good heavy land it ran from 30 to 38 cwt. per acre, but on the secondary land from 18 to 24 cwt. per acre. *Meadow Hay*—An average crop. *Potatoes*—Barely an average; about 7 tons dressed ware per acre; there was no disease. *Turnips*—The early sown turnips were a good crop and brairded quickly; the later sown were most disappointing. *Insects*—No serious damage caused. *Weeds*—No serious damage done. *Pastures*—In the early part of summer suffered severely from drought, but after the rains came they were exceptionally good. *Live Stock*—Did well, and cattle and sheep were free from disease. *Clip of Wool*—A good average.

DUMFRIES DISTRICT.

DUMFRIES (Annandale). *Wheat*—Very small acreage grown; well harvested and of good quality; yield, about 44 bushels per acre; straw, 30 cwt. per acre; about 4¼ bushels per acre usually sown. *Barley*—None grown. *Oats*—Acreage less than in 1938; straw much lighter owing to dry weather in May and June; crops were well harvested, and threshed well above average; yield, 50 bushels per acre; straw, 25 cwt. per acre; seed sown, 5 bushels per acre potato, or 6 bushels per acre thick-skinned varieties. *Harvest*—Began about 20th August and finished by end of September; crops were well secured. *Hay*—Ryegrass hay crop much lighter than usual; weather good, and hay well got; 1 ton 10 cwt. per acre. *Meadow Hay*—Also lighter than last year, but of very good quality; 1 ton 15 cwt. per acre. *Potatoes*—A very good crop and well harvested; have kept well in pits; quality very good; yield, about 9 tons per acre; Arran Peak, the only new variety planted, has proved a good cropper. *Turnips*—About an average crop; some fields very good and others very poor; brairded well and were singled early, but dry weather at beginning of summer kept back growth; weight per acre, about 8 tons. *Insects*—Not so much damage as usual. *Weeds*—Crops not injured to any great extent. *Pastures*—Very bare in the early part of season, but good in the latter end of year. *Live Stock*—Did rather better than in previous year; cattle and sheep were free from disease. *Clip of Wool*—About average.

DUMFRIES (Nithsdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—A very good crop, not much laid; ripened fairly evenly; threshed very well. *Harvest*—About a week earlier than usual; started last week in August, general by first week in September; late places had a very good quick harvest. *Hay*—A light crop, not so well got as in 1938. *Meadow Hay*—A fairly good crop; not so heavy nor so well got as in previous year. *Potatoes*—The best crop in the district for years; very free from disease; yield, about 6 tons 10 cwt. per acre. *Turnips*—Brairded well; not as much disease as in 1938; about 16 to 20 tons per acre. *Insects*—Crop free from insect pests, but pigeons a great scourge. *Weeds*—Crops very free from injury in most cases. *Pastures*—Very good; much better than last year. *Live Stock*—Throve well, and specially on late farms; cows did exceptionally well; cattle and sheep were free from disease. *Clip of Wool*—Average; quality about as good as previous year.

DUMFRIES (Eskdale). *Wheat*—None grown. *Barley*—None grown. *Oats*—Crops all over were fairly good, lea oats especially; some sow-out crops were short in straw and light; all secured in excellent condition; very early places got some bad weather, but later districts had it very good; crops did not thrash as expected; average about 35 bushels per acre; seed sown, potato and small oats, 5 bushels per acre. *Harvest*—Began about the same time as last year, but was finished earlier. *Hay and Meadow Hay*—Were lighter than last year, especially meadow hay; ryegrass hay averaged about 33 cwts. per acre, and meadow about 28 cwts. per acre. *Potatoes*—A better crop than in 1938; about 7 to 8 tons per acre; there was no disease; tubers were perhaps hardly so large, but were very sound. *Turnips*—A much better crop than in previous year; quality very good; the braird was very good, although in some cases resowing was required, owing to the dry weather at the time of sowing. *Insects*—Not much damage at all; less than last year. *Weeds*—Very odd places were affected badly; not so much injury as last year. *Pastures*—Very good all season; of average growth, and lasted much longer in autumn. *Live Stock*—Did very well on pastures, and cattle and sheep very free from disease all year; there were a few reports of deaths amongst hoggs from Braxy, almost in every case in stock which were not inoculated against this disease. *Clip of Wool*—About the same quantity as in 1938; the quality was fully better; both were above the average.

KIRKCUDBRIGHTSHIRE. *Wheat*—Only a small acreage grown; it was secured in excellent condition and thrashed out well. *Barley*—Practically none grown. *Oats*—Owing to the exceptionally dry spring and summer, the driest in this locality since 1911, oats were a very light crop; the harvest, though dry, was very slow, and some grain was damaged through stacking too quickly; the yield of grain to the acre was almost up to the average, but straw which in this area is extensively used for fodder was extremely scarce. *Harvest*—Began a week earlier than usual; in early districts it began about the 7th of August and was very general one week later. *Hay*—Ryegrass hay was the smallest crop in most peoples' memories owing to the extraordinary dry spring and early summer; probably it would only average 15 to 20 cwt. per acre. *Meadow Hay*—A slightly better crop than ryegrass, but only about 20 cwt. per acre. *Potatoes*—An excellent crop; the best and soundest for many years; 8 tons per acre, and lifted in excellent condition; some, however, were damaged in pits during the exceedingly hard frost in January. *Turnips*—Turned out a good crop on most farms, although many were not singled until August; the marvellous warm autumn saved the situation, and swedes finished up more than an average crop; yield, about 22 tons per acre; although the turnips lay for six weeks without brairding, very little resowing was necessary. *Insects*—No great trouble caused. *Weeds*—Owing to the dry year weeds were not so troublesome as usual. *Pastures*—Were very bare and burned up to beginning of July; after that they were excellent; the total year's growth would be about the average. *Live Stock*—Lambs did exceedingly well, but in the early summer months feeding cattle and dairy cows suffered from the lack of sufficient grass; cattle and sheep were generally fairly free from disease. *Clip of Wool*—Quality was excellent and weight about average.

WIGTOWNSHIRE. *Wheat*—Very little grown. *Barley*—Very little grown. *Oats*—Lea oats, 36 to 38 bushels per acre; after green crop, 42 to 44 bushels per acre; seed sown, potato oats, 5 to 6 bushels per acre broadcast; 3 to 4 bushels per acre drilled; large varieties, 5 to 7 bushels per acre; the seed-bed was fairly good, and oats generally brairded well, but progress was checked in May by cold, dry weather, and, later, drought did damage; when rain came a good deal of aftershot appeared; the crop never recovered from the early setback, and the straw was short, although grain filled out well before harvest. *Harvest*—Started much about the same time as the previous year; as the crop on most farms was a standing one, the binder was in general use all over, and cutting was soon done; a spell of damp, foggy weather then set in, and on early farms much handling of the crop had to be done to get it in order, but there was a good deal of sprouting, and the grain was discoloured; after this bad spell was over those who harvested later had splendid harvest weather, and secured their crop in fine order. *Hay*—Owing to unfavourable weather and want of rain the hay crop was generally light, probably less than 2 tons per acre; the quality was excellent; after the rain came in many cases the aftermath was better than the hay crop for bulk. *Meadow Hay*—Less productive than last year, a poor crop probably less than 1 ton per acre. *Potatoes*—Early potatoes in general suffered badly from frost, growth being retarded; a very light crop was dug at the start, and the crop did not bulk as in former years; 6 tons per acre; Epicures chiefly were planted; late potatoes did well and were quite a good crop, with good weather at lifting; 8 to 9 tons per acre. *Turnips*—16 to 20 tons per acre; the braird on many farms was very much in patches, and in some cases the late braird was thinned when the first braird was nearly ready for back-weeding; the fields, owing to the dry weather, were very clean, but when the rain came the weeds arrived; runches and redshank flourished and took a good deal of extra work to weed; owing to the mild and sunny autumn the turnip crop bulked very well and kept fairly sound; the best crop for some years. *Insects*—No injury to any great extent. *Weeds*—Dockens showed no sign of decreasing, and redshank was very prevalent in turnip fields; weeds in pastures were kept well under control. *Pastures*—Promised well in early spring, but owing to dry, frosty weather they received a setback in May, and did not recover for some time; later they improved, and with ideal autumn weather there was any quantity of grass till well on in the year. *Live Stock*—For reasons stated above, it was only an average year for dairy cows, although the amount of grass available in autumn helped to prevent a sharp fall in yield; young stock did well; grass-sickness, navel-ill, and hoven were experienced as usual, but this year was no worse than last for diseases among horses and cattle; lambs were much subject to worms, and this added to the losses of the sheep-farmer. *Clip of Wool*—Above the average.

GLASGOW DISTRICT.

Ayrshire. *Wheat*—Grain, 48 bushels per acre; straw, 15 cwt. per acre; grain was of very good quality and gave a good yield; straw was very short, but quality was good; seed sown, 3 bushels per acre. *Barley*—Very little grown. *Oats*—Grain, 45 bushels per acre; straw, 14 cwt. per acre; the quality of the grain generally was good and the pickle well filled; straw was very short, but of good quality; seed sown, 5 to 6 bushels per acre. *Harvest*—Began about the usual time and was carried through most expeditiously to a finish; weather was good, and the straw was short, which facilitated a quick clearance in good condition. *Hay*—A very short crop; about 20 cwt. per acre, which was all secured in good condition and made good feeding. There was a distinct shortage of clover owing to the drought. *Meadow Hay*—About 30 per cent less than in 1938, but was secured in good condition. *Potatoes*—Early potatoes were a very small crop, about 4 tons per acre, and prematurely ripened owing to drought; late potatoes, about 5 tons per acre, were also under average, but were of better quality than usual; virus diseases appeared to be prevalent, though they were difficult to identify owing to the shrivelling of the leaves by drought. *Turnips*—A good crop of sound roots in most places; about 18 tons per acre; the crop brairded normally, but subsequent growth was slow during the dry weather; turnips grew well in the autumn and finished up a good crop. *Insects*--Green-fly on potato crops were more plentiful than usual and did considerable damage to the leaves. *Weeds*—Were not nearly so prevalent this year, as the dry weather facilitated their eradication. *Pastures*—Very bare and burnt during June and July, but grew and grazed well late into the year. *Live Stock*—Did well where they had sufficient grass, but many pastures were overstocked during the drought and never recovered in time to make up the deficiency in live stock products; disease among stock has not been serious, probably largely due to the preventative measures which are now practised. *Clip of Wool*—About average and of good quality.

Bute. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop; probably better than last year. *Harvest*—Began at the usual time; weather fair throughout; a good proportion of the crop was spoiled by being carted in before it was ready, as the weather was not good for drying. *Hay*—In most cases a better crop than last year's; about 2 tons per acre; very well got. *Meadow Hay*—Very little grown in the island. *Potatoes*—Epicures, the early crop, better this year; digging started on 9th June, just about the same time as last year; Kerr's Pink, the late crop, good; about 9 tons per acre; fine weather to finish up the digging. *Turnips*—Crop better than in the previous year; on some farms it was very good; hardly any resowing required. *Insects*—No loss reported. *Weeds*—No loss from weeds, which were easily kept down. *Pastures*—Good during summer. *Live Stock*—Did well, and no special diseases reported. *Clip of Wool*—Bulk and quality both good.

Arran. *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop, and harvested in good condition; yield, 30 to 35 bushels per acre; straw, 1 ton per acre; seed sown, 5 to 6 bushels per acre.

Harvest—Began about a week later than last year. *Hay*—Rather better than last year both in quality and quantity; 25 to 30 cwt. per acre. *Meadow Hay*—Not a great deal grown. *Potatoes*—Average crop; 7 to 8 tons per acre; the digging of early varieties began a week earlier than in previous years; Arran Pilot is doing very well; and seed trade good for stock seed of that variety. *Turnips*—Crops are getting to be a failure on many farms due to disease or black heart. *Insects*—Crops not injured to any extent. *Weeds*—Redshank a common enemy, as it is so persistent in life. *Pastures*—Were very good throughout the season, and continued late; lime has proved a great tonic to Arran lands. *Live Stock*—Sheep and cattle throve very well, but sheep prices poorest for many years; the opposite is the case for cattle, for which there is great demand. *Clip of Wool*—Just about the average, but prices poor.

LANARKSHIRE (Upper Ward). *Wheat*—Only small quantities grown. *Barley*—None grown. *Oats*—40 to 65 bushels per acre; grain and straw of very good quality; seed sown, 5 to 6 bushels per acre. *Harvest*—Commenced end of August; earlier than usual by about ten days. *Hay*—A fair crop; much better secured than last year; 2 to 3 tons per acre. *Meadow Hay*—Not so heavy as in previous year, but secured in good condition. *Potatoes*—7 to 10 tons per acre; an exceptionally good crop; lifted and secured in perfect condition; no disease. *Turnips*—15 to 25 tons per acre; a poor crop; brairded badly owing to dry weather; some resowing, but most of seed lay dormant until rain came. *Insects*—No damage done. *Weeds*—Very few owing to dry weather. *Pastures*—Fair up till July, but improved greatly in September. *Live Stock*—Throve well and kept free from disease. *Clip of Wool*—Above average.

LANARKSHIRE (Middle and Lower Wards). *Wheat*—Threshed exceptionally well; 30 cwt. per acre of grain, and from 30 to 35 cwt. of straw; straw of first-class quality, and grain in good condition; seed sown, 3½ to 4 bushels per acre. *Barley*—None grown. *Oats*—Crop shorter of straw than last year, but threshed from 30 to 35 cwt. per acre; straw, 25 cwt. per acre; grain sample good, and straw of first-class quality. *Harvest*—Commenced in the third week of August, and in the later districts in the beginning of September; dates practically similar to last year. *Hay*—First cut ryegrass and clover yielded 40 to 50 cwt. per acre of good quality. *Meadow Hay*—45 to 50 cwt. per acre; quality also good. *Potatoes*—8 to 9 tons per acre; similar to last year's yield; tubers small in size; very little disease visible. *Turnips*—Yield, 25 to 30 tons per acre; crop sound; no resowing required. *Insects*—The carrot-fly did more damage than in 1938, with the result that a considerable area of this crop disappeared. *Weeds*—Owing to the favourable season, seasonal weeds were easily kept down, and consequently no damage was done to growing crops. *Pastures*—The grazing season was not so favourable as last year, and on the lighter land the pastures suffered from drought. *Live Stock*—Did well on pasture, notwithstanding the drought, but larger quantities of concentrated feeding-stuffs had to be fed; cattle and sheep were free from disease. *Clip of Wool*—Yield up to the average; unfortunately the market price did not come up to expectations; so far, few sales of the 1939 clip have taken place.

RENFREWSHIRE. *Wheat*—Crop variable but on the whole under average; yield of grain, from 20 to 30 cwt. per acre; straw, 20 to 25 cwt. per acre: seed sown, 3 to 4 bushels per acre. *Barley*—None grown. *Oats*—A poor crop, much below average; yield, 18 to 25 cwt. of both grain and straw per acre; seed sown, 5 to 6 bushels per acre. *Harvest*—Commenced about 12th August, a week earlier than last year, and finished about middle of September, much earlier than in 1938 (which was an exceptionally bad harvest); the weather, although dry, was much too close to be good harvest weather, and in consequence much grain was led before it was in proper condition for stacking; it was reported that in sheltered fields sheaves were moulding in the stooks, due to the closeness of the weather. *Hay*—One of the lightest crops for many years, owing to drought; yield, 20 to 30 cwt. per acre; secured in good order. *Meadow Hay*—Little grown; crop also poor; secured in good order. *Potatoes*—An exceptionally good crop; in the earlier districts, where potato-growing is a specialised business, record crops were dug; yields, second earlies, 10 to 13 tons per acre; main crops, Kerr's Pink, 10½ to 12½ tons per acre; Golden Wonder, 8 to 9 tons per acre; not much blight evident in the growing crop, but quite considerable wastage in the pit from the disease; no new varieties planted. *Turnips*—Good crops; 25 to 35 tons per acre, but in several instances extensive damage done by crows at thinning time; crop brairded quickly and well, despite the dry weather, and no resowing reported. *Insects*—No unusual damage reported. *Weeds*—Less prevalent than usual due to dry weather during the growing period, which was a blessing, as labour, for weeding, &c., was almost impossible to get. *Pastures*—As last year, suffered from drought till end of June, but thereafter grazed well right on till Christmas, when they were checked by frost. *Live Stock*—Throve well, and disease no more prevalent than usual. *Clip of Wool*—Average for quantity and quality.

ARGYLLSHIRE (Lochgilphead). *Wheat*—Practically none grown. *Barley*—None grown. *Oats*—Very good crop and well secured; about 35 bushels of grain and 20 to 25 cwt. of straw per acre; seed sown, 5 to 6 bushels per acre, according to variety. *Harvest*—About a week earlier than usual. *Hay*—A light crop owing to deficiency of rain in early summer; quality good; about 1 ton per acre. *Meadow Hay*—About the same as in previous year, but much better secured. *Potatoes*—Very good; about 8 tons per acre of the heavy cropping varieties; no disease. *Turnips*—About the same as last year; about 25 tons per acre; crop brairded well on the whole, and there was not much resowing. *Insects*—No injury to any extent. *Weeds*—No great damage done. *Pastures*—Were of average growth and quality. *Live Stock*—Did very well; cattle and sheep were free from disease. *Clip of Wool*—Average.

ARGYLLSHIRE (Kintyre). *Wheat*—Only about 5 or 6 acres grown in district; sowing seriously delayed by wet weather in autumn and early winter; yield about 20 cwt. per acre; seed sown, 3 to 3½ bushels per acre. *Barley*—A rather larger acreage under barley than in preceding year; yields higher and got in good condition; 18 to 22 cwt. per acre; seed sown, usually 3½ to 4 bushels per acre; straw rather shorter than in previous year; crops generally stood well. *Oats*—Crops threshed very well, with yields reported as high as 30 cwt. per acre; average on the better soils, 20 to 25 cwt. per acre; yield of straw rather under last year, the crops standing shorter; lodging much less than in previous harvest; quality of grass and straw much better; seed sown, 5 bushels per acre on average; generally a much more satisfactory crop than its predecessor. *Harvest*—Started about the same time as in 1938, but was completed in less time and with less labour in cutting and leading. *Hay*—Early cuts of seed hay rather light by reason of dry weather conditions in spring and early summer; yields about 25 to 30 cwt. per acre; early crops got in good condition, but later cuts rather badly weathered; larger quantity of western wolth crops grown; yields very satisfactory at 45 to 50 cwt. per acre; several instances of two cuts of western wolth being taken, the second hay crop being about 50 per cent of the first; the later cuts secured in very good condition. *Meadow Hay*—Yields about same as in previous year, but got in better condition; average yields about 25 to 30 cwt. per acre. *Potatoes*—Early crop planted earlier than usual, commencing on 1st February; crops checked by subsequent frosts, however, and were lifted at usual time; yields, 4 to 5 tons per acre; main crops very good, yielding average of about 8 tons per acre, with highest yields at 12 to 14 tons per acre; crops generally looked healthy and vigorous, but blight occurred in some localities, and the disease showed itself in pits; Kerr's Pink the popular variety, but Dunbar Standard is gaining favour with some growers; sprain disease reported from two or three sources. *Turnips*—Crop superior generally to that of 1938, which was ruined by severe frost; yields about double in some cases; good average yields 20 to 25 tons per acre, and scaling up to 30 tons per acre; Monkwood variety of swede becoming very popular in the district as a spring keeper; crops brairded quite well and few, if any, resowings required; finger-and-toe severe in a few instances; dry-rot disease continued being the most troublesome disease in the swede crop. *Insects*—Not much damage reported, and the turnip-fly was not in appreciable evidence; root maggot and wireworm attack on green crops less than usual; a few crops of lea oats thinned by leather jacket grub. *Weeds*—Main weeds charlock, runch, and spurry in oat crop, and redshank in root crops; fewer complaints than usual. *Pastures*—Growth late in commencing, but subsequent progress good; fields grazed well into the autumn and early winter. *Live Stock*—Throve well; abundant keep late into the grazing season kept stock going without the usual amount of artificial feeding; stocks generally kept very healthy, and sheep flocks maintained condition very well to the close of the year. *Clip of Wool*—Quite on a par with average year; weight of wool rather up by the fleece.

ARGYLLSHIRE (Islands of Islay, Jura, and Colonsay). *Wheat*—None grown. *Barley*—None grown. *Oats*—Very good crop, averaging 43 bushels per acre (42 lb. per bushel); straw was of good length and yield heavy; seed sown, 5 bushels to the acre. *Harvest*—Began 14th August and ended 14th September; this can be reckoned as before the usual date; general yield was good in quantity and quality; some loss was suffered by cloudburst on 3rd September which washed away some unsecured crops on river banks. *Hay*—Lighter than last year; about 20 cwt. per acre for ryegrass and 30 cwt. per acre for clover; very cold dry spring and early summer greatly retarded growth. *Meadow Hay*—Less productive than in previous year. *Potatoes*—An improvement on last year, giving 8 to 8½ tons per acre; crops harvested well in excellent weather; no undue damage by insects or disease, and no departure from usual varieties. *Turnips*—About 16 tons per acre of good quality; a good crop which brairded well; despite cold dry spring most farmers caught a short spell of warm damp weather for planting, and in only a very few cases was a second sowing necessary. *Insects*—No damage beyond usual reported. *Weeds*—Thinning greatly hindered by weeds, but crop overcame any serious damage. *Pastures*—Lighter than average. *Live Stock*—Despite poor pastures stock seemed to thrive well, probably because of good summer weather to balance deficiency in pastures; cattle have done well, but maggots were again more troublesome than they have been for a year or two. *Clip of Wool*—Quality good and of average weight.

STIRLING DISTRICT.

DUMBARTONSHIRE (Upper). *Wheat*—None grown. *Barley*—None grown. *Oats*—Rather lighter than last year owing to dry weather in April and May. *Harvest*—Began about a fortnight before the usual time; those who were early in August got a bad harvest, those later got a good harvest. *Hay*—Ryegrass hay was lighter than last year and was not so well got. *Meadow Hay*—Much lighter, but was generally well got. *Potatoes*—A good crop; about 8 tons per acre; they were free from disease; no new varieties planted. *Turnips*—A fair crop; about 20 tons per acre; brairded well, no resowing. *Insects*—No damage reported. *Weeds*—No injury caused; owing to the dry weather in May and June they were easily kept down. *Pastures*—Barely as good as last year till late in the season. *Live Stock*—Throve slowly in the early part of the season, but grass kept growing till late in the year; there was trembling among hoggs in April and May. *Clip of Wool*—Fully average.

DUMBARTONSHIRE (Lower). *Wheat*—Yielded about 43 bushels per acre of good quality grain and was harvested in first-class condition; straw, about 25 cwt. per acre; the crop was rather better grown than last year and very much better harvested; seed sown, 3 to 4 bushels per acre. *Barley*—None grown. *Oats*—Were a good average crop, and the yield of grain was better than in 1938, but straw was shorter; grain, 46 bushels per acre; straw, 22 cwt. per acre; quality very good. *Harvest*—Oat harvest was early, probably about seven days before the usual time; wheat was cut about the usual time. *Hay*—Ryegrass and clover hay were deficient both in quantity and quality as compared with last year; average about 34 cwt. per acre. *Meadow Hay*—Much the same as last year in quantity, but quality was deficient; yield, about 32 cwt. per acre. *Potatoes*—Yielded about 7½ tons per acre; much the same as last year; the crop was remarkably free from blight, and there has been no special feature in the introduction of new varieties. *Turnips*—Yield about 16 tons per acre, which is better than last year; quality also better than in 1938; the crop brairded exceptionally well, and there was no occasion for resowing. *Insects*—There was no appearance of damage by insects or pests. *Weeds*—Charlock was noticeable in the oat crop, but not to a serious extent; redshank was troublesome amongst turnips in the late summer. *Pastures*—Rather bare early in the grazing season, but from mid-June onwards till late into the back-end were excellent. *Live Stock*—Both cattle and sheep did very well during the grazing season, especially during the autumn; back calving dairy cows were badly affected with mastitis during August and September. *Clip of Wool*—About average both for quality and quantity.

STIRLINGSHIRE (West). *Wheat*—Not much grown on account of excessive rains at sowing-time. *Barley*—None grown. *Oats*—Lea oats lighter; sow-out oats light; quantity less than previous year; quality also below average; bulk of straw below average. *Harvest*—Began eight to ten days earlier than usual. *Hay*—Similar to previous year as regards quantity; quality better. *Meadow Hay*—Lighter than in previous year. *Potatoes*—7 tons 10 cwt. to 9 tons 10 cwt. per acre; quality very good; very little disease, except that second earlies were attacked three to four weeks before digging; no new varieties. *Turnips*—Crop lighter, quality better, than previous year; braird quite good; no resowing. *Insects*—No obvious injury done. *Weeds*—Less troublesome than in previous year; redshank most prevalent. *Pastures*—Above average, but slow in spring. *Live Stock*—Did very well; above average; and there was less disease, except udder clap, which was more prevalent than usual. *Clip of Wool*—Average.

STIRLINGSHIRE (East). *Wheat*—About 36 bushels per acre; fair quality; straw, about 14 cwt. per acre. *Barley*—About 32 bushels per acre; fair crop; straw, about 15 cwt. per acre. *Oats*—A fair crop; about 42 bushels per acre; straw, about 15 cwt. per acre. *Harvest*—Began about the middle of August, the first half being very slow owing to an entire absence of wind, but finished better than last year. *Hay*—Average crop, well secured; ryegrass about 30 cwt. and timothy about 40 cwt. per acre. *Meadow Hay*—Fair average crop. *Potatoes*—Good crop; usual varieties planted. *Turnips*—Fair crop. *Insects*—Damage not more than usual. *Weeds*—No unusual trouble caused. *Pastures*—Average growth. *Live Stock*—Did fairly well; no disease recorded. *Clip of Wool*—Rather over an average.

CLACKMANNANSHIRE. *Wheat*—The braird was good; the crop was also good, 35 to 40 bushels per acre; straw, 25 to 30 cwt. per acre; seed sown, 4 bushels per acre. *Barley*—None grown. *Oats*—A good crop, with plenty of straw; ears well filled; yield, 35 to 40 bushels per acre, average weight, 40 to 42 lb. per bushel. *Harvest*—Began at the usual time, and was completed under good conditions. *Hay*—Was a good crop, 35 to 40 cwt. per acre; the quality was very good. *Meadow Hay*—Very little grown. *Potatoes*—Kerr's Pink 6 to 7 tons per acre; Golden Wonder 5 to 6 tons per acre; very little disease; Arran Pilot produced some good crops up to 7 tons per acre, but quality not so good as Kerr's Pink. *Turnips*—A good crop, 20 to 30 tons per acre; brairded fairly well, but the turnip-fly attack was fairly heavy, and in a good many cases resowing was necessary; finger-and-toe was present, also dry-rot, but not excessive. *Insects*—Some damage by the turnip-fly, but not to any great extent. *Weeds*—Very little damage done. *Pastures*—Were quite good, especially where they were top-dressed with ground lime or basic slag. *Live Stock*—Did well; cattle and sheep were free from disease. *Clip of Wool*—A fair average.

PERTH DISTRICT.

PERTHSHIRE (Central). *Wheat*—Acreage about the same as two years ago; less than last year owing to wet weather; yield fair; 36 to 38 bushels per acre; straw, 20 to 22 cwt. per acre. *Barley*—Very little grown. *Oats*—About the same acreage as in 1938; yield good; 48 to 60 bushels per acre; straw, 20 to 22 cwt. per acre. *Harvest*—Started 15th August, a week earlier than last year, but mostly cut on the green side; very close weather resulted in a lot of heated stacks; those who were ten days later in starting secured the crop in good order. *Hay*—A good average crop; 30 cwt. per acre. *Meadow Hay*—An average crop; mostly well got. *Potatoes*—A good crop; average yield, 8 tons per acre; some disease amongst early varieties; lifted in fine condition. *Turnips*—Not so good as in previous year; swedes, 16 to 20 tons per acre; yellows, 14 to 18 tons per acre; early sown gave good braird, but later not so regular; pigeons did a lot of damage, and crows cleared many acres on several farms. *Insects*—No damage caused. *Weeds*—Crops free; better weather for cleaning. *Pastures*—Very good; a good average. *Live Stock*—All did well, and cattle and sheep were free from disease. *Clip of Wool*—Average and of good quality.

FIFESHIRE (Middle and Eastern). *Wheat*—Good crop; about 32 to 48 bushels per acre; rather better than last year; seed sown, 3 to 4 bushels per acre. *Barley*—Big crop; from 40 to 60 bushels per acre; early crop was slightly spoiled by bad weather in harvest; seed sown, about 3½ bushels per acre. *Oats*—Very good crop; not so much laid as last year; part of crop was damaged by bad weather in harvest; yield, from 60 to 80 bushels per acre. *Harvest*—Started at usual time, but had spell of thick foggy weather at beginning of harvest till end of August, when it broke up to three weeks good dry weather. *Hay*—Better quality than in 1938; quantity about average; about 2½ tons per acre. *Meadow Hay*—None grown. *Potatoes*—Big crop; 1½ tons per acre more than in previous year; not many new varieties grown. *Turnips*—Very variable; from 20 to 25 tons per acre; a good deal of disease; very little second sowing. *Insects*—Not more damage than usual. *Weeds*—Average injury. *Pastures*—Were good throughout the season. *Live Stock*—Throve well; cattle and sheep were free from disease. *Clip of Wool*—Average.

FIFESHIRE (Western). *Wheat*—Has not bulked well as compared with the previous year; grain and straw of average quality; much of the crop was sown in adverse weather conditions; yield, 26 to 34 bushels per acre; seed sown, 3 to 4 bushels per acre. *Barley*—Yielded average returns of 26 to 32 bushels per acre; straw good quality, but short; seed sown, 3 to 4 bushels per acre. *Oats*—Yielded varied qualities of grain; average, 40 to 50 bushels per acre; straw of good quality, but slightly short in weight; seed sown, 5 to 6 bushels per acre. *Harvest*—Started in the early districts in the third week of August, and was general by the beginning of September, which is one week later than the average of the past few years. *Hay*—The dry, barren weather during the spring retarded growth, and in consequence the yield was light, but of good quality; 30 to 40 cwt. per acre; difficulty was experienced in harvesting the crop from lack of drying winds. *Meadow Hay*—Likewise light in bulk, but quality good. *Potatoes*—Crop has given increased yields, under favourable weather conditions; average return, 5½ to 7 tons per acre; the crop was secured under ideal conditions, and was free from disease; no new varieties were planted. *Turnips*—It was anticipated in the early season that the turnip crop would be light, but with the mild autumn it bulked considerably, and has given average yields; the dry weather in June retarded the braird, and the plants were late in being thinned; very little resowing reported. *Insects*—Crops were free from insect pests. *Weeds*—The dry season prevented any appreciable growth of weeds, and the crops were kept clean. *Pastures*—During the early grazing season pastures were bare, but of good feeding value; the growth lasted well into the autumn and saved winter keep. *Live Stock*—Generally throve well on the pastures; cattle and sheep were free from disease. *Clip of Wool*—Average both for quality and weight.

PERTHSHIRE (Eastern). *Wheat*—Winter wheat was a moderate crop owing to the wet weather at time of sowing; quite a lot sown in the spring under average; yield, 34 to 40 bushels per acre; seed sown, 4 to 5 bushels per acre; samples quite good, although some lots a little soft. *Barley*—An average crop, but not a big acreage grown; yield, 40 to 42 bushels per acre, about the same as last year; seed sown, 3 to 4 bushels per acre; samples fairly good. *Oats*—An average crop, but samples all dark in colour owing to the dull weather at harvest, especially in early districts; from late districts samples were good; seed sown, 4 to 6 bushels per acre; average yield, 45 to 54 bushels per acre. *Harvest*—Began at the beginning of August, but the weather continued very dull till the middle of September; late districts had a good harvest. *Hay*—An average crop; about 40 cwt. per acre, in some cases a little more; quality good. *Meadow Hay*—An average crop; better than in 1938; quality good. *Potatoes*—6 to 9 tons per acre; a big crop, better than in previous year; very little disease; kept well in pits, having been lifted in very good weather; very few new varieties used. *Turnips*—Swedes a fair crop; not so good as last year; some disease reported; finger-and-toe prevalent in some districts; turnips sown in the second week of June brairded badly; yield, 25 to 30 tons per acre; yellows a good crop; some resowing owing to drought in June. *Insects*—No damage reported. *Weeds*—No damage, where properly worked. *Pastures*—Grass came early and did well all season; continued good till well into November owing to absence of frost. *Live Stock*—Did very well; cattle and sheep kept free from disease, but a few cases of trouble with early lambing Half-Bred ewes occurred. *Clip of Wool*—An average crop; a little better than in 1938.

PERTHSHIRE (Western). *Wheat*—Rather under average crop; of good quality; yield, 35 to 40 bushels per acre; straw, 25 cwt. per acre; secured in good order; little damage by sprouting; seed sown, 3½ to 4 bushels per acre. *Barley*—Very little grown. *Oats*—Lighter crop than in previous year; yield, 40 to 45 bushels per acre; straw, good, 20 to 23 cwt. per acre; stood well. *Harvest*—Commenced middle of August; very little delay in cutting; weather dry, but no drouth; owing to disastrous harvest in 1938 there was a tendency to stack too early, which caused a good deal of heating and turning of stacks; very little sprouting; a very good spell of weather at end of September and October gave late districts a good harvest. *Hay*—Timothy under average; 60 cwt. per acre; green cut; more than usual left for seed, which was difficult to secure owing to quiet weather; ryegrass under average; not too well got. *Meadow Hay*—Average crop, well got. *Potatoes*—Average crop; 6 to 8 tons per acre; lifted under excellent conditions; kept well in pits, but severe frost at New Year threatened damage. *Turnips*—Under average crop; 20 to 23 tons per acre; irregular brairds; some second sowings owing to seed germinating and drying up, and also on account of fly. *Insects*—Very little damage reported. *Weeds*—Gave less trouble than for many years. *Pastures*—Very good, better than in previous year. *Live Stock*—Throve well in the best grazing season for several years, and were free from disease. *Clip of Wool*—Average; of good quality.

PERTHSHIRE (Highland). *Wheat*—Not generally sown; only a few acres grown on suitable farms. *Barley*—Only small patches grown for stock; weight light. *Oats*—Crop above average, with straw of good quality; natural weight about 42 lb. per bushel; seed sown, 6 to 8 bushels per acre, according to variety. *Harvest*—Began in the end of August, somewhat earlier than usual, and in most cases was completed by the end of September; was slightly interrupted by broken weather in the early stages. *Hay*—Crop average and well secured; 30 cwt. per acre; aftermath of clover light. *Meadow Hay*—Average as to quantity, and of good quality where secured early. *Potatoes*—A good crop secured under favourable weather conditions; about 7 to 8 tons per acre; not much disease apparent; no new varieties planted to any extent. *Turnips*—A good crop; brairded well, and no second sowing required; about 18 tons per acre. *Weeds*—Very few, and where they appeared were easily dealt with. *Pastures*—Of average growth and quality. *Live Stock*—Throve well, and were generally free from disease; a few isolated cases of grass sickness among horses reported. *Clip of Wool*—Quality and quantity about average; weather conditions fine during clipping season.

ABERDEEN DISTRICT.

ANGUS (Western). *Wheat*—32 bushels per acre; grain and straw fair quality; seed sown, 3 to 4 bushels per acre drilled. *Barley*—38 bushels per acre; grain good, but straw very fair quality; seed sown, 3 to 4 bushels per acre, drilled. *Oats*—45 bushels per acre; grain and straw very fair quality; seed sown, 5 to 6 bushels per acre, according to variety and district. *Harvest*—Started early in good weather for cutting, but no winning weather, and crop had to stay much longer than usual in stook, thus spoiling a lot; later, in glens, the harvest was good. *Hay*—3 tons per acre; quality mostly good. *Meadow Hay*—Very little grown. *Potatoes*—7 tons per acre; some blight, but not so much spraying required; only a lot of burning down shaws with acid spray; lifting started in September. *Turnips*—18 to 20 tons per acre; brairded well, and kept on all the season. *Insects*—No injury except where seed dressing had not been used on oats; damage from grub about usual. *Weeds*—Damage about usual. *Pastures*—Average growth and quality, with a big flush towards end of season. *Live Stock*—Throve well; disease much the same as usual, except for losses from grass sickness among horses. *Clip of Wool*—Good; just about the average.

ANGUS (Eastern). *Wheat*—Crop rather above average; grain, 46 bushels per acre; good quality, and generally well secured; straw firmer than usual and stood up well; seed sown, between 3 and 4 bushels per acre. *Barley*—Average crop; about 48 bushels per acre; straw shorter than average; grain good quality, but slightly darkened in colour on account of persistent rain in September; many good crops on the best land, turning out 56 to 60 bushels per acre; prices satisfactory; seed sown, 3 to 3½ bushels per acre. *Oats*—Generally a very good crop, but badly darkened in colour by September rain and misty weather; sprout just showing in stooks; straw stood up well, but dark in colour and of poor feeding quality; well filled heads of plump grain threshed from 64 to 104 bushels per acre on best land; seed sown, 4 to 6 bushels, according to variety. *Harvest*—Began early, about 12th August, with ten days of very fine weather; then harvesting became very tedious on account of rain, misty weather, and high temperature, which discoloured all grain and straw; wheat suffered least and was quite good in colour; harvest lasted six to seven weeks, but weather cleared then and stacks dried very well; the larger proportion was built in the fields where grown. *Hay*—Crop much lighter than average; about 2 tons per acre, generally very well got; fairly well mixed with clover; aftermath got rain and was really good. *Meadow Hay*—Very little grown; probably less productive than in 1938. *Potatoes*—A good crop, much the same as in previous year; there was less disease and fewer rough ones, and therefore a bigger tonnage of sound potatoes was produced; 8 to 10 tons per acre about average; blight started in wet weather in September, when tubers were well grown, and many farmers burned off the shaws, thus saving the crop. *Turnips*—Swedes a better and much sounder crop than in 1938, when, as winter progressed, they kept very badly, going black in the heart and rotting; yield, 24 to 30 tons per acre, and even a little more on the best land; yellow turnips not much grown, as they have done so badly during the last eight or ten years. *Insects*—Did not trouble the crops to any extent and there were far fewer slug or wireworm holes in potatoes than usual; no fly amongst swedes or beet. *Weeds*—With dry weather till latter half of August, weeds were easily overcome, and crops grew fast, but potato shaws went down early, and the wet September weather brought on a rush of weeds, especially charlock, and the green crop break looked in many cases foul. *Pastures*—Stood out well even in the dry weather of early summer, and there was a great abundance of grass in autumn. *Live Stock*—Cattle and sheep throve and fattened very well both in early and late summer, and no disease of any consequence was reported. *Clip of Wool*—Quality very good; crop quite average.

KINCARDINESHIRE. *Wheat*—22 cwt. per acre; grain and straw of better quality than in 1938; straw shorter; in the Stonehaven district crop did not come through the winter so well; seed sown, 3½ to 4½ bushels per acre. *Barley*—18 to 24 cwt. per acre; where grain was not laid quality was good; in the Stonehaven district crop suffered from drought, and was only normal in that area; seed sown, 3½ to 4 bushels per acre. *Oats*—15 to 30 cwt. per acre, depending on locality; in the Stonehaven area crop suffered from severe drought, especially clean land; average crop, 18 to 27 cwt. per acre; crop lighter in Deeside than in the Howe of the Mearns; grain and straw of better quality than in previous year, except in Stonehaven district. *Harvest*—Began about mid-August, which is about the usual time. *Hay*—A short crop and deficient in clover; was secured in better condition and, in the St Cyrus district, the quality was much better than last year; yield, 1½ to 3 tons per acre. *Meadow Hay*—None grown. *Potatoes*—Were a very heavy crop; 6 to 12 tons per acre, according to district, slightly lighter crops at seaside; disease prevalent in certain varieties, commencing about the middle of August; no new varieties. *Turnips : Howe o' the Mearns*—Swedes were better and healthier than last year, but many crops of yellow turnips went soft; 21 to 28 tons per acre; early sown fields brairded well; *St Cyrus*—Crop not so good as in 1938; it was slow to braird, and consequently left a lot of blanks; 25 tons per acre; *Stonehaven*—Owing to severe drought crop very poor; 10 to 20 tons per acre; quite a lot of second sowing on account of fly damage and dry weather. *Insects*—No material damage done. *Weeds*—Owing to the very wet weather in spring were more abundant than usual. *Pastures*—In the beginning of the season grass was very scarce, but very abundant in the late season. *Live Stock*—Did quite well, and there was no outbreak of any epidemic. *Clip of Wool*—Quality good.

ABERDEENSHIRE (Buchan). *Wheat*—None grown. *Barley*—Fair crop; 40 bushels per acre. *Oats*—Good crop, but not up to previous year. *Harvest*—Began about 20th August; the earlier parts got bad weather, and the crop was badly weather-bitten; the later cut grain was secured in good order. *Hay*—Very thin and short of last year's return; clover scarce; not too well harvested; yield, 30 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—Good crop; practically no disease; yield, 7 tons per acre. *Turnips*—Brairded well, but a good deal of resowing owing to frosty mornings and the beetle; weight of crop, 12 to 14 tons per acre. *Insects*—Not worse than usual. *Weeds*—No injury reported. *Pastures*—The best grazing season in reporter's experience. *Live Stock*—Throve splendidly, and were free from disease. *Clip of Wool*—Average.

ABERDEENSHIRE (Central). *Wheat*—17 to 18 cwt. per acre; quality much inferior to 1938, with a much wider range than in a normal year; seed sown, 4 bushels per acre. *Barley*—16 to 18 cwt. per acre; quality much inferior to previous year, with also a much wider range than in a normal year; seed sown, 4 bushels per acre. *Oats*—15 to 20 cwt. per acre; quality much inferior to last year, and also a much wider range than in an average season; seed sown, from 4 to 6 bushels per acre; varieties of foreign origin require more seed per acre, they do not tiller so well as native varieties. *Harvest*—Began about the usual time, but was much longer in being finished than in an average season. *Hay*—Quantity and quality lower than the previous year, especially quality; a much wider range covered by both than in an average season. *Meadow Hay*—Not very much grown, but was much about the same as last year. *Potatoes*—5 to 7 tons per acre; quality generally good, with very little disease reported; no mention of any new varieties being planted. *Turnips*—From 8 to 12 tons per acre, only about half of 1938 crop; brairded very unequally, and second sowing was quite common; the weather and conditions of the land were both to blame. *Insects*—Little or no complaint of injury, weather and condition of soil being more to blame for deficiencies. *Weeds*—Caused injury to some extent, and damage was rather more than in a normal season; knotgrass and surface weeds were plentiful. *Pastures*—During the season were good, and improved towards the end of the season; some young cattle were out much longer than in a normal season. *Live Stock*—All stock did as well as could be expected under the conditions; cattle and sheep have been free from disease. *Clip of Wool*—About average in quality and quantity.

ABERDEENSHIRE (Strathbogie). *Wheat*—None grown. *Barley*—Quantity grown average; fair quality; average yield, 32 bushels per acre, weighing 45 to 52 lb. per bushel; 4 bushels per acre were sown. *Oats*—Crops very poor owing to bad weather conditions; badly harvested and yield below average; yield, 36 to 40 bushels per acre, weighing 38 to 40 lb. per bushel. *Harvest*—Bad, perhaps the worst experienced for many years; those who were unable to cut and carry early had their crop sitting out until very late in the year; in fact, there was one crop still out at the New Year. *Hay*—A fair quantity grown for home consumption only. *Meadow Hay*—None grown. *Potatoes*—Yield slightly below average; staple crops, Kerr's Pink and Golden Wonder; no new varieties grown; quality below average. *Turnips*—Crops very unsatisfactory, and more than usual had to be resown. *Insects*—Not much trouble caused, apart from fly early in the season. *Weeds*—An unusually dry spell of weather prior to May resulted in no trouble with weeds, and the weather was favourable for cleaning the land. *Pastures*—Abundant, and lasted well into the autumn. *Live Stock*—Did well on pasture and were free from disease. *Clip of Wool*—Of good quality and quantity average. *General Remarks*—In the Strathbogie district the year 1939 was one of the worst experienced for many years. The wet weather which set in after a dry spring made harvesting difficult. Turnips did badly in the autumn.

BANFFSHIRE (Lower). *Wheat*—Quantity slightly less than in the previous year, yielding 40 to 45 bushels per acre; natural weight, 58 to 60 lb. per bushel; straw, 20 to 25 cwt. per acre; seed sown, 4½ to 5 bushels per acre. *Barley*—A poor crop, yielding 24 to 40 bushels per acre; natural weight 54 lb. per bushel; straw, 15 to 20 cwt. per acre; seed sown, 4 bushels per acre. *Oats*—An average crop, yielding 48 to 52 bushels per acre; natural weight, 40 to 42 lb. per bushel; straw, 25 to 28 cwt. per acre; seed sown, 6 bushels per acre, and up to 7 bushels per acre for thick-skinned varieties. *Harvest*—Barley cutting began on 21st August, and oats a week later. *Hay*—Crop was not so heavy as last year; clovers were deficient; yield, 25 to 30 cwt. per acre. *Meadow Hay*—Practically none grown. *Potatoes*—A good crop of excellent quality, yielding 8 to 10 tons per acre; no disease; no new varieties planted. *Turnips*—A very poor crop, and quality poor; 10 to 12 tons per acre; winter frosts destroyed large quantities; brairded well, but had to be resown owing to dry, frosty weather towards end of May. *Insects*—No injury caused. *Weeds*—No damage done. *Pastures*—Of average growth. *Live Stock*—Did fairly well; cattle and sheep were free from disease, and there were fewer deaths among horses from grass-sickness. *Clip of Wool*—Quality good, and quantity up to average.

BANFFSHIRE (Upper). *Wheat*—None grown. *Barley*—Very little grown, as home barley is not much used. *Oats*—Quite a good crop on acreage cultivated; 38 to 40 bushels per acre; bushel weight lighter than usual owing to rainy, cold summer, 38 to 41 lb. per bushel; seed sown, generally 6 bushels per acre. *Harvest*—Commenced about 10th September; in many cases hardly a finish made owing to incessant rainfall. *Hay*—About same as last year, if anything rather lighter; ryegrass and clover fairly well mixed; quantity, from 1½ to 1¾ tons per acre. *Meadow Hay*—None grown. *Potatoes*—Not so heavy as last year; disease rather prevalent as weather kept ground so wet all through the summer. *Turnips*—Crop much less; about 8 to 9 tons per acre; blanks in brairding never filled up; no second sowing required. *Insects*—No particular damage except that some of the weaker turnip seedlings were eaten off as they came through. *Weeds*—Turnips rather choked up with yarr and skelloch owing to wet conditions. *Pastures*—Quite average; came well and kept up well all through the grazing season. *Live Stock*—Throve quite well all through, and no disease was recorded. *Clip of Wool*—About the average.

INVERNESS DISTRICT.

MORAYSHIRE. *Wheat*—Below average; 35 bushels per acre; quality not so good as in 1938; straw, average crop, 30 cwt. per acre; seed sown, 3 to 4 bushels per acre, according to whether drilled or broadcast. *Barley*—Very disappointing yield in most cases; 30 bushels per acre; quality fair, not so deficient as quantity; straw, average about 20 cwt. per acre of fair quality. *Oats*—Average crop to look at on the ground, but yield very poor in threshing; 40 bushels per acre; unusual amount of lights, and bushel weight below average; straw, 23 cwt. per acre; fair quality where well harvested; much of it damaged by standing too long in stook; this applies to barley too, especially in the uplands; the poor yield of grain is reckoned due to extra dry early growing period and, later, to much rain and lack of sunshine. *Harvest*—Began a week later than year before; from 14th August, according to district. *Hay*—Rather less than in previous year; Lower Moray, 40 cwt. per acre; the higher country, 23 cwt. per acre; quality very good where early got; much of it damaged in making, later. *Meadow Hay*—None grown. *Potatoes*—Much the same as in 1938; 5½ tons per acre; quality good; not much disease; no new varieties. *Turnips*—Very variable; some fine crops of swedes up to 30 tons per acre; others very poor where the ground was too dry when sown; yellows a poor crop on the average; disease not so bad as in some former years. *Insects*—Not so much trouble with raan or rotting as in some former years. *Weeds*—Gave little trouble to turnips, where well hoed during the early dry spell; later, they were more difficult, and many fields finished very weedy. *Pastures*—Made slow growth in the early spring and summer; improved greatly later and made a very good pasture season, both quantity and quality. *Live Stock*—Did very well, and cattle and sheep were free from disease. *Clip of Wool*—Average.

NAIRNSHIRE. *Barley*—Very poor yield of grain; about 24 to 28 bushels per acre; seed sown, 3½ to 4 bushels per acre. *Oats*—Yield very much below average; about 40 bushels per acre; seed sown, 6 to 7 bushels per acre. *Harvest*—Began about usual time—that is, about third week in August. *Hay*—Much under previous year, say 15 cwt. per acre. *Meadow Hay*—None grown. *Potatoes*—About 7 tons per acre; no disease reported. *Turnips*—The poorest yield of turnips for many years; the crop brairded badly, and second and even third sowings were common owing to dry weather. *Insects*—Caused no injury. *Weeds*—Turnips suffered much from a weed known locally as melgs. *Pastures*—Above average. *Live Stock*—Did well, and kept free from disease. *Clip of Wool*—Better than average.

INVERNESS-SHIRE (Skye). *Wheat*—None grown. *Barley*—None grown. *Oats*—A good crop, worth considerably more than the previous year's and mostly stacked in good condition. *Harvest*—Commenced about normal time, during first week of August; weather at first broken, but afterwards excellent. *Hay*—Both in respect of quality and quantity the crop was better than in the previous year. *Meadow Hay*—Most of the crop was secured in good condition and was improved in quality and quantity over the previous year. *Potatoes*—Seed supplied to crofters last spring proved much inferior to the crofters' own; those who planted their own secured sounder and better crops; the crop, as a whole, was good and would have been abnormally so had the seed been uniformly good. *Turnips*—Very little of the crop grown in the area, and what was tended to unsoundness. *Insects*—There did not appear to be much damage from insect pests. *Weeds*—There was the usual damage from weeds; only a small proportion of the land is weeded, that under potatoes and patches of turnips, and thus weeds get a chance to thrive. *Pastures*—As a rule, were better than in the previous year. *Live Stock*—Did well; cattle and sheep were in good condition at the end of the grazing season; diseases were much as usual, the most common being trembling among sheep; cattle also showed signs of trouble during the first month of the grazing season. *Clip of Wool*—About average, being slightly improved over that of the previous year.

INVERNESS-SHIRE (Lochaber). *Wheat*—None grown. *Barley*—None grown. *Oats*—Over average crop; seed sown, about 6 bushels per acre. *Harvest*—Began before the usual time; early in August; all crops were secured in good order. *Hay*—Ryegrass and clover below the average owing to the dry weather in May and June. *Meadow Hay*—Came away well after the middle of June; quite an average crop and well secured. *Potatoes*—An average crop, secured in good order; no disease and potatoes kept well; mostly Kerr's Pink and Golden Wonder grown. *Turnips*—Under the average, and very badly affected by grub or maggot; brairded well and looked well until about August, when this pest got a hold and seemed to affect all the crop. *Insects*—The damage was worse than usual; the maggot or fly seemed to attack all turnip crops in this district, and unless it can be checked it is little use trying to grow turnips. *Weeds*—Very little damage done owing to dry season. *Pastures*—Average. *Live Stock*—Did very well all season; cattle and sheep were free from disease. *Clip of Wool*—Average.

ROSS-SHIRE (Dingwall and Munlochy). *Wheat*—Smaller acreage grown; yield, 32 to 44 bushels per acre. *Barley*—Larger acreage grown; yield below average, 30 to 40 bushels per acre; grain light, and straw short. *Oats*—A fair crop, but straw small in bulk, and grain only fair sample; did not thresh up to appearance; yield below average. *Harvest*—Began about the normal time; the crop was all secured in good order. *Hay*—A light crop. *Meadow Hay*—Practically none grown. *Potatoes*—Yield, 4 to 10 tons per acre; a good deal of blight experienced. *Turnips*—Swedes, 15 to 25 tons per acre; yellows, 10 to 20 tons per acre; a great deal of resowing owing to frost. *Insects*—No damage reported, but a great deal of damage done to crops of all sorts by crows and wood-pigeons, which have both become a plague in this area. *Weeds*—No injury recorded. *Pastures*—Average growth; pasture scarce at start of season, but good at back-end. *Live Stock*—Throve well, but fat cattle did not weigh well off grass; cattle and sheep kept free from disease. *Clip of Wool*—About average.

ROSS-SHIRE (Tain, Cromarty, and Invergordon). *Wheat*—Generally speaking, a very bad crop; did not thresh well; weather too dry in May and first two weeks in June; seed sown, 4 bushels per acre. *Barley*—Over all, a light crop; the worst in this county; quite common return, 30 to 40 bushels per acre; generally husky and light in weight, 52 to 54 lb. per bushel; grain in good condition; 3 to 4 bushels per acre sown. *Oats*—Probably the worst threshing crop ever seen; light in straw generally, but straw very good; 40 bushels to the acre would be slightly above the average; colour good. *Harvest*—Began last week in August. *Hay*—Very light crop; quality fair. *Meadow Hay*—A better crop, but not much grown. *Potatoes*—A little more than an average crop; some good fields after lea gave up to 10 tons per acre. *Turnips*—Very irregular, owing to dry weather and maggot-fly; tonnage per acre variable, especially in yellows. *Insects*—Not much finger-and-toe, but great damage by maggot-fly. *Weeds*—Land fairly clean all over. *Pastures*—Cattle grazed well, although there was shortage of keep. *Live Stock*—Lambs did well until the rain came; although dosing had not been neglected earlier, there was a good deal of trouble; cattle and sheep have been fairly free from disease. *Clip of Wool*—Generally good.

CAITHNESS-SHIRE. *Wheat*—Small acreage grown; crops were good; 60 bushels per acre; grain and straw were better quality than last year; seed sown, 4 bushels per acre. *Barley*—Crops similar to previous year; average yield, 44 bushels per acre; straw shorter; grain of good quality; seed sown, 4 bushels per acre. *Oats*—Crops not so heavy as last year; straw shorter, very little lodged; grain and straw good quality; average yield about 40 bushels per acre; straw, 1½ to 2 tons per acre; seed sown, 4 to 7 bushels per acre. *Harvest*—Began about a week or ten days earlier than in 1938; many farms had begun cutting in the last week of August; weather was favourable and crops were secured in good condition. *Hay*—An average crop; better quality than last year; average quantity, 2 to 3 tons per acre. *Meadow Hay*—Rather less productive than in previous year; quality was better; not spoiled by rain to the same extent as last year. *Potatoes*—Crops were better than last year; tubers bigger and healthier; not much evidence of disease; average yield, 5 tons per acre; no new varieties planted. *Turnips*—Better than in 1938 in quantity and quality; average yield, 25 to 28 tons per acre; crop brairded well; no resowing necessary. *Insects*—Very little damage done. *Weeds*—Crops not much injured; charlock abundant in corn crops, and thistles in pastures; damage rather less than usual. *Pastures*—Were slow of growth in May and June, but improved later. *Live Stock*—Did not make rapid progress in May and June; weather was cold and pastures bare; improved during autumn months; sheep were subject to attack by the maggot-fly, but otherwise sheep and cattle were free from disease. *Clip of Wool*—Average, and of good quality.

ORKNEY. *Wheat*—None grown. *Barley*—Bere variety grown; grain, 30 to 35 bushels per acre; straw, 25 to 30 cwt. per acre; bushel weight, 45 to 50 lb.; seeding, 3½ to 4 bushels per acre. *Oats*—Grain, 40 to 60 bushels per acre; straw, 30 to 35 cwt. per acre; bushel weight, 38 to 42 lb.; seeding, 4 to 5 bushels per acre; and of larger grained varieties, 6 to 7 bushels per acre. *Harvest*—Commenced a few days later than usual, but this handicap was entirely offset by the almost unprecedented excellence of the weather; the work was completed in record time and the crop built in first-rate condition. *Hay*—The yield was about average, say 30 to 40 cwt. per acre; clover was plentiful, and the harvest weather good. *Meadow Hay*—Similar to the previous year. *Potatoes*—Yield and quality better than for previous year, and disease less prevalent; yield, 5 to 8 tons per acre; blight again occurred in some districts; no report on new varieties. *Turnips*—Yield, 18 to 28 tons per acre; crop was of better quality than last year, but considerable damage resulted from severe frosts during January; some damage by vermin reported. *Insects*—No damage to report. *Weeds*—Some damage by charlock in certain, and especially island, districts; in some districts thistles tended to spread. *Pastures*—Perhaps not quite so good as usual, especially during the early part of the season. *Live Stock*—Made good progress, and were mostly free of disease; one or two cases of suspected grass-sickness amongst horses reported. *Clip of Wool*—Of average quality and quantity.

SHETLAND. *Wheat*—None grown. *Bere*—Good crop; the yield and quality very similar to that of last year; bushel weight, 51 lb.; yield of grain, 25 bushels per acre. *Oats*—Good crop; very much better quality, though with less bulk of straw than in the previous year, and superior yield of grain; 40 to 42 bushels per acre; bushel weight, 36 to 40 lb. *Harvest*—Earlier than usual. Bere harvest commenced about middle of August; oats during first week in September, which is about a fortnight earlier than usual. *Hay*—The yield was lower than last year, while the quality also was slightly inferior; yield, 18 to 22 cwt. per acre. *Meadow Hay*—Rather less productive than in 1938. *Potatoes*—Crop yield, 4 to 7 tons per acre; very similar to last year; quality slightly better; very little disease; Redskin continued to give satisfactory results. *Turnips*—Weight and quality of crop very similar to last year, 16 to 20 tons per acre; braird only fair due to cold winds experienced at seed-time, though resowing unnecessary. *Insects*—Very little damage caused; cabbage root fly and cabbage moth caterpillar caused slight damage in localised districts; damage caused similar to previous years. *Weeds*—Damage due to charlock average. *Pastures*—Similar to last year. *Live Stock*—Throve well; rather better than during the previous year, which was wetter; little disease among cattle and sheep, liverfluke among sheep now being widely treated. *Clip of Wool*—Average both in yield and quality; demand better than last year; moorit, 2s. per lb.; pure Shetland white, 1s. 10d. per lb.; black and grey, 1s. 6d. per lb.

THE WEATHER OF SCOTLAND IN 1939.

By W. A. HARWOOD, D.Sc.

THIS report consists of (1) a general description of the weather from month to month, and (2) a selection of rainfall returns in which each county of Scotland is represented by one or more stations. Temperature readings, unless otherwise stated, are from the thermometers exposed in the regulation "Stevenson Screen."

JANUARY.

The weather of January may be summed up as very cold during the first week, with frequent snow in the course of the month.

Conditions were unsettled generally, a series of depressions maintaining disturbed weather, with only short fairer intervals. The depression tracks lay mainly to the south of Scotland, and there was a consequent excess of cold N. and N.E. winds. Gales were reported on sixteen days, the stormiest day being the 15th. On this day the anemometer at Bell Rock recorded a mean speed of 50 miles per hour between 11 P.M. and midnight. Gusts reached 70 miles per hour at Bell Rock, 67 at Lerwick, and 63 at Kirkwall. The total duration of winds of gale force during the month was 27 hours at Bell Rock and not more than 5 at any other station.

The cold spell which affected the whole country in the first week was very intense. During this period the temperature fell to 1° F. (31 degrees of frost) at Braemar and Dalwhinnie on the 4th, 6° F. at Logie Coldstone on the 6th, and 7° F. at Balmoral and West Linton. Much milder weather set in sharply on the 7th over the whole country, this day being the warmest day of the month at most stations. The highest temperatures reported were 55° F. at Onich and 54° F. at Ayr and Colmonell, while many stations in the south and west had temperatures of 50° F. or more. Very severe ground frosts were experienced in the first week, and ground frosts of varying intensity were reported from one part or another on all days except the 9th and 20th. In the very cold spell, temperature on the exposed ground fell to $-2°$ F. (34 degrees of frost) on the 4th at Braemar and on the 6th at Dalwhinnie.

Rainfall was remarkably persistent in many places, the only relatively dry spells being from the 2nd to the 5th and from the 27th to the end of the month, the earlier of these coinciding with the period of extreme cold. In various parts of the country twenty-five or more days had measurable rainfall. The amount of rainfall was above normal in the east and north and also south of the line from Dundee to Renfrew. The excess was very substantial in places, more than twice the normal rainfall being recorded in the Firth of Tay area and in the extreme south-east. On the other hand, the amount was below normal in the west, some places in Argyll having only about half the normal amount. The monthly totals ranged from 13·70 inches at Ben Alder to 3·00 inches at Loch Laggan, and the largest daily fall was 2·55 inches at Lochgoilhead on 14th, this day being the wettest day of the month. Snow or sleet fell at one place or another on twenty-five days; many places had snow on the 1st and from 24th to 28th. There was 7 inches of undrifted snow at Braemar in the first week and about 8 inches on the 28th and 29th. Hail occurred locally on twenty-three days, and was fairly widespread on the 24th. There were thunderstorms in some east coast towns on the night of the 25th, and at Stornoway on the 8th-9th.

The duration of sunshine was much above the average in parts of the north-west, the totals at Stornoway, Oban, and Onich being more than double that ordinarily experienced. In the east, on the other hand, the amount of sunshine was below normal. From 65 to 68 hours of bright sunshine were recorded at Turnberry, Oban, and Tiree, while less than 30 hours were registered in the inland area of the north, and Peebles also reported a marked deficiency.

FEBRUARY.

This month was mild generally and, on the whole, wet.

The weather continued to be unsettled during February, but depressions mostly passed to the northward of Scotland between Iceland and Norway, and conditions became rather mild, with frequent and sometimes heavy rainfall. Gales occurred oftener than during January in the north, but less often in the south, Lerwick recording a total of 67 hours on eighteen days against 5 hours in January, and Bell Rock 16 hours against 27 in January. Gales were reported from one part or another on every day except the 1st, 2nd, 17th, and 28th. The stormiest period in the north was the 15th-16th, when gusts of 80 miles per hour were recorded at Stornoway, 75 at Kirkwall, and 70 at Tiree; but in the south-east the winds were strongest on the 6th, the mean speed in Edinburgh reaching 51 miles per hour between 11 P.M. and midnight with gusts up to 81 miles per hour.

The opening days of the month were cold, and some low temperatures were registered on the 2nd, Braemar having 9° F. (23 degrees of frost), West Linton 14° F., and Dalwhinnie, Balmoral, and Forres 15° F. For the month as a whole, however, conditions were generally milder than usual, and mean temperatures appreciably above normal in all districts, the excess being over 2° F. in the south-west and about 4° F. in the north-east. In the warmest period, during the second week of the month, temperature in the shade rose to 62° F. on the 10th at Aberdeen, this being 5 degrees above the highest previously recorded there in early February. On the same day the temperature reached 61° F. at Craibstone and 60° F. at Crieff, Gordon Castle, Forres, and Lossiemouth. Ground frosts were reported from all districts during the cold spell at the beginning of the month, and again during the last three days. They occurred at one place or another on twenty days of the month. The lowest temperatures on exposed ground were 8° F. at Braemar, 9° F. at Dalwhinnie, and 11° F. at Balmoral and West Linton, all on the 2nd.

The beginning of the month was dry over the greater part of the country, but persistent rain set in on the 3rd, some places in the north and west having rain every day from the 3rd to the 28th. As a result there was an excess of rainfall in most parts, the excess being greatest in the west where some stations had twice the usual amount. Rainfall was, however, somewhat less than the average in the Moray Firth area, in the extreme south-east, and at one or two isolated stations. Monthly totals ranged from 27·49 inches at Loan to 1·41 inch at Nethy Bridge. Days with falls of over 1 inch were numerous in all parts. Kinlochquoich had ten such days, including three successive days, the 9th, 10th and 11th, on which the amounts were 2·85, 5·05, and 1·95 inches respectively. Snow fell frequently, being reported on sixteen days, but the falls were not heavy. Hail was widespread in the west on the 16th and 22nd, and occurred locally on thirteen other days. Thunderstorms were reported on six days, a large area being affected on the 26th.

Sunshine was below the normal over most of the country, though there was a slight excess in Shetland and Banffshire. The deficiency was most marked in the west. The monthly totals were in the neighbourhood of 80 hours in Banffshire, while some stations in the area of deficient sunshine had only about 20 hours.

MARCH.

This month was rather warmer than usual, and sunshine was above normal in the west. Rainfall was variable, with considerable excess locally in the south.

The weather was quieter than in February, the duration of winds of gale force falling to 18 hours at Lerwick and 7 at Bell Rock. Gales were reported locally on thirteen days, and were fairly widespread on the 2nd, 3rd, 6th, and 20th. They were not in general very severe, but that of the 20th gave gusts up to 73 miles per hour at Stornoway. During the first few days of the month unsettled mild conditions prevailed, with frequent rain or drizzle, but some sunny periods. Thereafter temperature became rather variable, especially in the east, quiet conditions alternating with bursts of polar air. A spell of quiet, fine weather from 24th to 26th gave very bright days in the west. Apart from scattered showers, mainly fair conditions then continued in the west till the end of the month, but dull, rather wet, and cold days marked the close of the month in the east.

On the whole, temperature was rather higher than usual, and in the Clyde area and parts of Perthshire the excess was rather over 2° F. The warmest weather occurred during an anticyclonic spell which continued from 7th to 20th, shade temperature rising on the 13th to 62° F. at Stonehaven, 61° F. at Lundin Links, and 60° F. at Montrose. Short cold spells on 9th-10th, and 24th to 26th also occurred in fine anticyclonic conditions. In these the lowest temperatures registered were 21° F. at Dalwhinnie on the 9th, 23° F. at Balmoral and Wolfelee on the 15th and 24th, and 20° F. at Braemar on the 24th. Ground frosts were reported from one place or another every day except from 3rd to 6th and 14th to 16th. The lowest temperatures on exposed ground at Dalwhinnie were 13° F. on the 24th and 15° F. on the 9th, 12th, and 26th, while on the 24th Braemar had 17° F., Edinburgh 18° F., and Carluke 19° F.

The month was on the whole wet in the south, but there were large areas elsewhere with rather less than the average rainfall. The departures from normal were not great, only a few isolated stations in the south recording 50 per cent above normal. Rainfall was, however, remarkably persistent in places, many stations having measurable amounts on twenty-eight days. Monthly totals ranged from 13·89 inches at Loan to 2·16 inches at Nethy Bridge, and the largest daily fall was 2·58 inches at Shiel (Kirkcudbright). Snow fell generally from 6th to 8th and from 20th to 22nd, and locally on fourteen other days, but it was not heavy. Hail was widespread on the 6th and 7th in the west, and from 22nd to 27th over the whole country. It was reported on sixteen days in all. There was a thundery spell from 5th to 8th, and storms occurred on the 7th in all parts of West Scotland. They were very severe in places, and half-inch hailstones were reported. Thunder occurred also on the 24th.

Sunshine was above normal at numerous stations, especially in the west. In the east the amount was, on the whole, below normal. There was, however, no very large excess or deficiency. Totals were smallest in the hill districts, and the monthly amounts ranged from between 128 and 123 hours at Troon, Carluke, Nairn, Dumfries, and Stornoway to 85 hours at Eskdalemuir and 78 at Strathy (Sutherland).

APRIL.

The month was sunny on the whole. Between the 9th and the 21st—*i.e.*, about Easter—the weather was warm at times, and especially so on the 11th. Generally speaking, rainfall was deficient.

Except in the extreme north, where the month opened fair and at some places sunny, unsettled weather prevailed during the first few days. Quiet, warm conditions set in after the 7th, and these lasted until the 13th, from which date to the 17th weather was again unsettled, with gales in most parts. Further fine spells occurred from 18th to 20th and 27th to 31st, with an intervening period of cool showery weather from 21st to 27th. The number of days of gale fell to ten, and the total duration of gales to 6 hours at Bell Rock, 4 at Lerwick, and 3 at Stornoway. The 16th and 17th were the stormiest days, gusts of 65 miles per hour occurring at Stornoway and 60 at Bell Rock.

The mean temperature was about normal or slightly above it, the greatest excess amounting to rather more than 1° F. in Renfrewshire and Ayrshire. The only notable cold spells were from 5th to 7th and 27th to 30th. On the warmest day of the month, the 11th, the shade temperature reached 72° F. at Ruthwell, and 70° F. at many other places in the south-west. The lowest shade temperatures were registered during the early cold spell, the coldest day being the 7th, with 19° F. at Dalwhinnie and 20° F. at Braemar and West Linton. The 30th was also cold, West Linton again having 20° F. Ground frosts occurred at one place or another every day except on the 10th and from 13th to 16th inclusive. They were most marked at Dalwhinnie, where the temperature on exposed ground fell to 8° F. on the 7th, 9° F. on the 30th, and 10° F. on the 29th. Balmoral had 11° F. on the 7th.

Rainfall was below normal in most parts, but normal or slightly above in the Clyde district and parts of the West

Highlands. The driest area was along the east coast, where Aberdeen and Montrose had less than half their usual rainfall. Monthly totals ranged from 7·73 inches at Kinlochquoich to 1·33 inch at Rothiemurchus. Daily falls exceeding an inch were fairly numerous in the west from 13th to 16th and 21st to 23rd. The largest daily fall was 1·50 inch at Kinlochquoich on the 14th. Snowfall was reported on sixteen days in all. It was widespread but not heavy in North and Central Scotland on the 25th-26th. Reports of hail were received on sixteen days, and of thunder on seven days. Thunderstorms were numerous in the south from the 11th to the 13th.

The coast stations had, on the whole, more than the normal amount of sunshine, while inland stations had less than the normal. The excess was greatest in Shetland, where Lerwick had 37 hours more than its normal 127. The totals varied from between 179 and 170 hours at Dunbar, Stornoway, Turnberry, and Arbroath to 103 and 106 hours at Dalwhinnie and Benmore respectively.

MAY.

The weather of May was markedly dry, and the last week exceptionally warm locally and unusually sunny in most parts.

The month opened with fine, sunny weather, except in the extreme north, though this fine spell was accompanied by cold north and north-east winds. Milder, showery weather followed for several days between the 4th and the 11th, on which day cold northerly winds again set in and persisted for about a week. The 22nd introduced a warmer period, and except for the 26th the last week was bright and warm generally, daily amounts of sunshine reaching 15 hours in several places. Gales were reported on four days, but even at Stornoway the total duration for the month was only one hour.

Mean temperatures for the month were above the average in all districts, the excess being due mainly to the warmth of the last ten days. In Edinburgh and at Fortrose the excess was about 2·5° F. The highest temperatures were registered at the end of the month, on the 30th and 31st, when many stations had their highest temperatures for several years at this season. Outstanding readings were 80° F. at Forres and 79° F. at Nairn on the 30th, and 80° F. at Newton Stewart on the 31st, while Dalwhinnie had a day temperature of 72° F. on the 30th, followed by a night temperature of 33° F. The cold spell of the first week was unusually intense for May, the night temperature on the 3rd falling to 26° F. at Glenlee, 27° F. at Balmoral and Braemar, and 28° F. at Kilmarnock. Ground frosts were reported at many places on the 3rd and 4th, and on nineteen other days mostly at high-level stations.

Weather was exceptionally dry generally. The total rainfall over most of the country was less than half the normal, while parts of the Moray Firth area and Dumfriesshire had less than a quarter of their usual amount. The month's total at many stations was under 1 inch. Most places, however, had measurable rain on twelve days, and at no station did the weather come under the heading "absolute drought" (fifteen consecutive days with under ·01 inch on any day). Monthly totals ranged from 4·54 inches at Loch Arkaig to 0·63 inch at Kingussie. The largest daily fall was 0·95 inch at Kingairloch. Hail was reported locally on five days. Thunderstorms were widespread in South and Central Scotland on the 7th, and one fatality occurred in Edinburgh. Local storms occurred on four other days.

The monthly totals of sunshine were above normal in most parts, but not everywhere, considerable deficiencies being reported from Orkney and Shetland, while there were smaller deficiencies in the extreme north-west and at a few places in the east. Turnberry had 231 hours (33 hours above normal), Oban 222 hours (42 above normal), and most stations in Ayrshire and Renfrewshire upwards of 200 hours. The smallest amounts were 115 hours at Lerwick and 123 at Deerness.

JUNE.

The weather was generally very bright, warm and dry during the first week, after which it became less settled and cooler, but with many bright intervals.

The fine conditions of late May persisted into June. In the first week brilliant weather prevailed over the whole country, and record high temperatures occurred in places, while conditions at others came under the heading "absolute drought" (under ·01 inch of rain for fifteen days in succession). These conditions began to break on the 7th when N.W. winds brought a fall of temperature, which was followed by rain in most parts on the 9th. A rather unsettled period of alternating rainy and bright spells then set in. The wind reached gale force on ten days along the western seaboard, and a total of 7 hours was reported at Stornoway, but only 1 hour at Tiree. The gales were not severe.

For the fifth successive month of the year the mean temperature was above normal, the excess being mainly due to the warm spell of the latter part of May and the early part of June. The country had record high temperatures from the 3rd to the 6th, readings of 80 to 85° F. being numerous. Glasgow reported 88° F. on the 4th, Edinburgh (Liberton)

87° F. on the 5th, and Perth 86° F. on the 4th. The range of temperature from day to night was large during the fine spell, exceeding 40° F. in numerous cases. Low temperatures were recorded during both the fine spell and the unsettled cool conditions after the setting in of N.W. winds on the 7th. On 2nd June West Linton had 30° F., and Wolfelee 31° F., while Dalwhinnie reported 30° F. on the 13th. Ground frosts occurred locally on eleven nights.

Rainfall was less than usual, except in some central districts where it was just above the average, and at a few places in the south where an excess of about 20 per cent occurred. Except from the extreme north-west, no rain was reported until the 9th, the rainless spell of late May and early June lasting eighteen days in the east and centre of the country. Monthly totals ranged from 5·58 inches at Loch Oich to 1·58 inch at Carr Bridge. The largest daily fall was 1·36 inch at Kinlochquoich on the 9th. Snow was reported in the Cairngorms on the 10th, 11th, and 24th, while falls of hail were widespread on the 11th and 12th, and local on 13th, 16th, and 30th. Many thunderstorms occurred in the centre and south on the 30th, and local storms on four other days.

Only two stations had deficiencies of sunshine during the month, and these deficiencies were small. The monthly totals ranged from 273 hours at Turnberry and 269 hours at Rothesay (the highest at these stations since 1925) to 163 hours at Stornoway, 164 at Duntuilm (Skye), and 165 at Strathy (Sutherland). Some daily amounts exceeded 16 hours.

JULY.

This month was the wettest July since before 1870 ; thunderstorms were widespread, especially in the third week.

The unsettled conditions of late June continued into July, and it was not until the 10th that there was a spell of fair weather. The respite was short, for heavy rain fell again on the 12th, and subsequently the weather was mainly dull and showery, with much thunder, relieved by short fair intervals. Winds of gale force were reported on five days, but they were short-lived, and their duration did not reach one hour at any reporting station.

For the month as a whole, weather was somewhat cooler than usual at almost all stations. The temperature deficit was not outstanding in any particular district, nor were there any extended warm or cold spells. In general, the warmest days were the 4th, 20th, and 21st; but the 5th was also warm in the north, and the 29th on the east coast. In Edinburgh and at Kilmarnock and Ruthwell 76° F. was recorded on the 4th, 20th and 21st respectively, and Fort William, Onich, and Benmore all had 74° F. on the 20th. On the coolest nights (24th and 25th) the temperature fell to about 40° F. generally, while West Linton had 32° F. (24th), Braemar and Wolfelee 33° F. (24th), and Dalwhinnie 33° F. (25th). Slight ground frosts occurred at some high-level stations on five nights.

Rainfall was spread over the whole month, and few stations had less than twenty days with measurable rainfall, while in the north-west the number of such days reached twenty-nine locally. More than double the average rainfall occurred in an area from Moray Firth to the west coast, and also in Orkney. Only in Edinburgh and locally in Ayrshire was the recorded rainfall slightly below normal. Monthly totals ranged from 13·26 inches at Glen Moidart to 4·66 inches at Loch Laggan. The wettest day was the 12th, when more than one inch of rain fell in the country generally, while over a considerable area in the west the amounts exceeded 2 inches. The largest daily falls reported were 3·50 inches at Ardgour, 3·48 at Kinlochmoidart, and 3·33 at Kinlochquoich. Snow was reported in the Cairngorms on the 1st and on Ben Nevis on the 23rd (a rare occurrence in July), and hail fell in many places on the 23rd and locally on the 1st, 2nd, and 31st. Thunder was frequent, being reported on twenty-one days. The storms were widespread on the 5th, and the 14th, 15th, and 19th were very thundery days in the south. During a storm at Troon on the 15th the rainfall amounted to 3·22 inches, of which about 2 inches fell in fifty minutes.

Sunshine was deficient everywhere, and there was a notably prolonged spell of dull weather in the north-west lasting for fourteen days from the 5th to the 18th. In this period Duntuilm (Skye) registered only 2·3 hours of sunshine. The totals were less than half of the normal at many places in the north and west. They varied from 165 and 151 hours at Dunbar and Lundin Links to between 57 and 69 hours at Stornoway, Deerness, and Banff.

AUGUST.

The month as a whole was notably dry, and the first part mainly cool, but the latter half warm. It was the eighth successive August with a mean temperature above the normal.

Unsettled conditions prevailed on the whole until towards the end of the first two weeks, and there were rather cool periods in the first week and about the middle of the month. There were exceptionally warm nights around the 28th. No winds of gale force were reported at any station.

The mean temperature was higher than usual over the whole country. The warmest days were the 18th, 19th, and 28th, when the temperature exceeded 70° F. in many places. A shade maximum of 78° F. was registered at Perth, Edinburgh, Kelso, Wolfelee, and Marchmont on the 18th, at Ruthwell on the 19th, and at Kilmarnock on the 28th. The warmest night was that of the 27th, when Onich reported 62° F. and Colmonell 61° F., and the night temperature remained above 60° F. at various other places. During the cool periods in the early and middle parts of the month screen temperatures fell to about 40° F. in many places at night. Dalwhinnie had 31° F. on the 5th and West Linton 32° F. on the 13th. Ground frosts were reported from Dalwhinnie on the 5th and 7th.

Rainfall was below normal in all parts, the deficiency being greatest over the southern half of the country where most places had rather less than half their normal rainfall. The monthly totals ranged from 4·51 inches at North Ballachulish to 1·09 inch at Fort Augustus. The largest daily fall was 1·45 inch at Glenshiel. Hail was reported locally on the 10th, 19th and 26th, and thunderstorms on sixteen days. Storms occurred in all parts on the 26th and were severe in the south. Two fatalities occurred at Jedburgh, and buildings were struck by lightning in Edinburgh and Arbroath. Flooding was severe at Troon and Arbroath. Shetland experienced one of its rare thunderstorms on the 9th.

Sunshine was above the average in the west, and below average in the centre and east. The totals ranged from 213 and 204 hours at Tiree and Stornoway respectively to 109 hours at Cardross and 117 at North Berwick.

SEPTEMBER.

The month was dry, and the latter half especially so. It was the seventh successive September with a mean temperature above the normal. Thunderstorms were widespread and severe on the 3rd.

The unusually warm spell of the latter half of August persisted during the first nine days of September, and was chiefly responsible for raising the mean temperature of September above normal. The last week of September was cool. Rain fell generally in the first thirteen days, but thereafter rainfall was infrequent and slight. Winds of gale force were reported on five days, the total duration at Lerwick being 2 hours, and at Bell Rock 1 hour.

The mean temperature was above normal in all districts, the excess at several widely separated stations reaching 3° F., and at Arbroath 3·8° F. During the warm period, from the 2nd to the 5th, many stations registered 70° F., while Kilmarnock and Edinburgh had 76° F. on 2nd and 5th respectively, and Paisley, Ruthwell, and Forres 75° F.

Night temperatures were also high at this time, Prestwick recording 63° F. and Kilmarnock, Troon, and Ayr 62° F. on the 3rd. Slight frost occurred at many places towards the end of the month. The lowest reported temperatures were 25° F. (approx.) at West Linton, Balmoral, and Braemar on the 28th. Day temperatures did not rise much above 50° F. in this period, and in places they were under 50° F. Ground frosts were widespread from 28th to 30th, and occurred locally on eight other days.

Over most of the country the rainfall was well below normal, many places in the south and west experiencing a period of drought from the 14th to the 30th. Only a few scattered stations had more than their normal rainfall, and this was the result of thunderstorms. Parts of Ross-shire and Ayrshire had less than half their normal amount. The monthly totals ranged from 5·29 inches at Glenmoidart and 5·39 inches on Barra to 0·89 at Glen Moriston. Daily falls exceeding an inch were numerous in the first ten days, but none occurred after the 12th. The 3rd was by far the wettest day, over 3 inches being reported in Barra and Islay and over 2 inches in Mull and at Glenbranter. Thunderstorms occurred in all districts on this day and were exceptionally severe in the west. Hail fell at Carluke. There was flooding in Islay, and serious landslides on the main road between Glasgow and Dunoon. Thunder was reported on fourteen other days.

There was a deficiency of sunshine at most places in east and south Scotland and a small excess in the west. The totals ranged from 143 hours at Arbroath, and 138 at Carnoustie, Rothesay, Troon, Prestwick, and Ayr, to 81 at Marchmont, 86 at Eskdalemuir, and 89 at Banff.

OCTOBER.

The month was the coolest October since 1932, but the weather was sunny and dry in the west. Conditions were relatively dull in the east, and wet in central areas.

Relatively fine quiet weather prevailed for most of the first week, but subsequently until the 15th it was disturbed. Quiet conditions then recurred until the 20th, and again between the 27th and 29th. From 21st to 26th, however, the country was under the influence of depressions passing eastwards between Greenland and Scandinavia, and at the end of the month it was affected by depressions to the south. On the whole, there was an excess of N. and N.E. winds, and conditions were cool, especially in the latter half of the month. Gales were reported on nine days, and Bell Rock experienced gusts up to 77 miles per hour on the 10th and 67 miles per hour on the 26th. The total duration of winds of gale force was 97 hours at Bell Rock, but only 6 hours at Stornoway.

Over the greater part of the country the mean temperature was below normal, though in the extreme north and north-west the differences from normal were slight. At several places in the south and south-west the deficiency exceeded 3° F. The warmest days were the 6th and 7th, when day temperatures rose to 64° F. at Onich, Newton Stewart and Auchincruive, to 65° F. at Kilmarnock, and to about 60° F. in many other places. Sharp frosts occurred at inland stations on the 18th and 28th, night temperatures of 20° F. (approx.) occurring at Braemar and Balmoral on the 18th, and 25° F. at Strathy, Perth, Prestwick, and Kilmarnock on the 28th. Ground frosts were registered at one place or another on every night except the 13th, 14th, and 23rd.

Rainfall was on the whole below normal, the deficiency being most marked in the West Highlands, where some stations had under a quarter of the normal amount. At Fort William the total for the three months, August to October, was 8·81 inches, the lowest amount previously recorded for these three months being 8·88 inches in 1915. On the other hand, in the east and a large part of the central area conditions were wetter than usual, Braemar having almost double its normal amount.

The wettest days were the 9th and 10th, falls of over an inch occurring on both days in all districts. The monthly totals varied from 6·20 inches at Spean Bridge to 0·94 inch at Arisaig. On the 9th Ardvorlich (Lochearnhead), Edinchip (Lochearnhead), and Dall Avon (Aberfeldy) had between two and three inches, and on the 10th Glenbranter, Forrest Lodge, Dalry, and Killin experienced similar falls. Snow was reported at high-level stations on eleven days, the falls being widespread in the central area on 24th-25th. Hail fell locally on eleven days, and thunderstorms were reported at one place or another on four days, the storms being fairly numerous on the 11th.

Sunshine was much above normal in the west, and exceeded the normal over most of the country, but there was a deficiency in the south-east and at some places along the east coast. The totals ranged from 150 and 146 hours at Duntuilm (Skye) and Oban respectively to 77 hours at Marchmont, 79 at North Berwick, and 80 at Dundee.

NOVEMBER.

The weather of November was mild and very unsettled, with excessive rainfall and some severe gales. There were no very cold days.

The month opened disturbed and dull, and these conditions continued until the 9th, when a temporary improvement occurred which lasted until the 12th. Thereafter the weather was variable, with alternating short fair spells and rough spells. The series of depressions affecting the country at brief intervals gave an excess of S. and S.W. winds, with their usual accompaniment of mild, wet weather. Gales were reported on twenty-two days, their total duration being 33 hours at Lerwick, 27 at Stornoway, 46 at Bell Rock, and 9 at Tiree. A westerly gale on the 26th was very severe and caused much damage, exceptionally strong winds being experienced over the whole of Scotland. A mean speed exceeding 50 miles per hour was recorded at widely separated stations, and gusts reached about 75 miles per hour.

The mean temperature of the month was everywhere above normal. The excess was small in the extreme north, but was nearly 4° F. in the Clyde area and at Fort William. Notable mild spells occurred widely from the 7th to the 13th, and again in the south at the end of the month. The highest day temperatures were 60° F. at Cupar on the 7th, 59° F. at Troon on the 11th, and 58° F. at Dunbar on the 7th. There were no very cold days. Ground frosts were recorded at one place or another on twenty-four nights.

Rainfall was above normal, except to the south and west of Moray Firth, where there was a slight deficiency. Some places in the south-west had more than twice their usual amount. The rainfall was persistent rather than exceptionally heavy, rain falling at many stations on every day of the month. The monthly totals varied from 17·53 inches at Kinlochquoich to 2·68 inches at Nethy Bridge. Daily falls of over an inch occurred generally, but few stations had over 2 inches. Falls exceeding 2 inches, all on the 30th, were recorded at Ardtornish, Brenchoillie, Inveraray, and Castle Kennedy. Light snow fell in parts, chiefly in the last week, and hail occurred locally on twelve days. There was thunder on eleven days, a thunderstorm on the 6th in Skye being accompanied by exceptionally large hailstones.

Sunshine was generally below normal, the deficiency being most marked in the south-west and west. The totals ranged from 65 to 60 hours at Craibstone, St Andrews, Forres, and Stonehaven to less than 20 hours at Oban and Prestwick.

DECEMBER.

The weather of December was dry, with a mean temperature below the average. Conditions were variable in the first half of the month, but in the second mainly anticyclonic.

The alternating short spells of fair and of disturbed weather, which characterised most of November, continued until about mid-December. Conditions then became more anticyclonic, and, though by no means settled, continued anticyclonic on and off until the end of the month. Mainly dry and dull cold weather prevailed during this period, and the last four days of the month were unusually cold. Gales were reported on fourteen days, most frequently in the north, where Lerwick had gales on ten days. The stormiest weather occurred on the 9th and the 13th. The duration of winds of gale force was 38 hours at Lerwick, 16 at Stornoway, and only 4 at Bell Rock.

The mean temperature of the month was below normal in most parts of the country, the greatest deficiency being about 3° F. in the south-west. At a few places in the north and north-west the temperature slightly exceeded the normal. The warmest day generally was the 1st, when 58° F. was registered in Edinburgh, Dunbar, Dunfermline, and Ayr. This temperature was recorded also at Oban on the 10th. The latter half of the month brought colder weather, West Linton having 10° F. on the 31st, Wolfelee 11° F. on the 19th, and Braemar and Kilmarnock 11° F. and 12° F. respectively on the 29th. Ground frosts were widespread and occurred on all but the first two days of the month.

The weather was unusually dry for a winter month, only a few stations in the extreme north-east having about their normal rainfall. In the south-east the amount was less than half the normal. The monthly totals ranged from 8·15 inches at Glen Quoich to 1·75 inch at Kingussie. Daily falls exceeding an inch were numerous in the west during the first ten days, but the only station reporting over 2 inches was Ardnadam (2·10 on the 9th). Snow and sleet showers occurred widely on the 4th and 5th and during the last week. There was, however, no appreciable accumulation. Hail was reported on eleven days, but no thunder.

Sunshine reached the normal amount at only a few scattered stations; elsewhere it was below normal. The totals ranged from between 37 and 33 hours at Eskdalemuir, Dumfries, Auchincruive, Ayr, St Andrews, and Arbroath to between 12 and 5 hours at Tiree, Paisley, Greenock, and Glasgow—the 5 hours in Glasgow being only 2 per cent of the hours between sunrise and sunset there in December.

General Notes.

The year had a number of outstanding features. The dryness of the spring and late summer months and a heat-wave in late May and early June contrasted with a very wet and markedly cool July. The weather of early June was brilliant, and for the year as a whole there was a special abundance of sunshine in the west. As in eight of the nine preceding years, the mean annual temperature was above normal; there was, however, a week of excessive cold in January. Gales were numerous, but not exceptionally so.

RAINFALL (MEASURED IN INCHES) FOR 1939
AT SELECTED STATIONS IN SCOTLAND.

	Jan	Feb	Mar	April	May	June	July	Aug.	Sept	Oct	Nov	Dec	Year.
Shetland—**Lerwick**	5·42	3·57	3·01	2·70	1·09	1·62	3·67	2·96	1·26	2·12	5·04	2·47	34·93
Orkney—**Kirkwall**	4·11	3·07	2·59	1·34	·83	1·65	4·52	2·22	1·76	1·89	6·65	4·13	35·66
Caithness—**Wick**	3·69	1·25	1·95	·99	·78	1·23	4·66	1·59	1·59	1·56	4·11	3·35	26·75
Sutherland—**Melvich**	5·01	2·51	2·25	1·55	1·16	1·82	5·33	2·28	1·61	2·73	6·71	4·64	37·60
Lairg	3·94	3·56	3·17	2·32	·98	1·47	4·38	1·38	1·85	3·14	4·85	3·11	34·15
Ross and Cromarty—													
Fortrose	3·22	2·37	2·31	1·34	·82	1·89	6·70	1·61	1·39	1·79	2·59	2·11	28·14
Tain	3·23	2·11	2·75	2·28	·48	1·27	7·87	1·74	1·69	1·73	3·50	2·62	31·27
Lochcarron	5·17	11·09	7·46	4·42	2·00	2·69	7·41	4·03	2·70	·93	9·73	4·69	62·32
Stornoway	4·86	5·43	4·08	2·57	1·20	1·30	5·66	2·53	2·74	3·28	6·36	2·97	42·98
Inverness—													
Inverness	3·08	2·43	1·88	1·16	·83	1·08	5·15	1·88	1·42	2·03	2·84	1·91	25·69
Fort-William	5·93	15·13	5·94	3·47	1·84	3·26	8·19	3·18	3·22	2·41	11·19	3·56	67·32
Glenquoich	6·55	19·11	11·19	6·52	2·01	4·25	9·23	5·23	3·11	2·18	15·47	8·15	93·00
Portree	5·28	12·45	6·07	4·65	2·17	1·97	9·13	3·65	3·45	2·29	10·55	3·41	65·07
Nairn—**Nairn**	2·77	1·60	1·74	1·17	·71	1·62	6·31	1·33	1·30	2·50	2·19	1·93	25·17
Moray—**Gordon Castle**	3·51	1·48	2·17	1·38	·97	1·48	4·31	1·67	1·88	4·08	3·12	2·92	28·97
Grantown	7·15	1·37	2·01	1·73	1·02	2·54	5·71	1·86	3·07	3·50	2·75	2·09	34·80
Banff—**Banff**	3·67	1·66	2·34	1·02	·75	1·75	3·97	2·02	2·42	2·75	3·04	2·38	27·77
Aberdeen—**Peterhead**	4·15	1·91	2·28	1·12	·85	1·45	4·27	1·74	1·72	2·81	4·05	2·40	28·75
Aberdeen (King's Coll.)	3·73	2·60	1·97	·84	1·13	1·29	4·88	1·31	2·18	3·09	3·22	1·65	27·89
Balmoral	3·50	2·76	2·68	1·21	·95	1·80	4·70	2·82	2·30	6·38	3·60	1·56	34·26
Kincardine—**Fordoun**	4·44	2·57	3·41	·57	1·33	1·25	3·77	1·82	2·85	5·40	4·54	2·14	34·09
Angus—													
Montrose (Asylum)	2·94	2·29	2·42	·61	1·24	1·33	4·66	1·88	2·22	3·02	3·80	1·14	27·55
Dundee	4·00	2·05	2·31	1·06	1·50	1·33	4·30	2·33	1·81	3·49	4·70	1·29	30·17
Glamis Castle	3·64	3·13	2·10	1·52	1·94	1·38	3·34	3·14	1·82	6·29	6·79	1·48	36·57
Brechin	4·74	3·07	2·77	·64	1·51	1·19	4·54	2·06	2·15	4·82	4·90	1·32	33·71
Perth—**Blair Castle**	2·73	2·93	2·78	1·78	·99	1·38	5·40	1·70	2·83	5·08	5·42	1·97	34·99
Crieff	3·53	3·73	2·67	1·83	1·37	1·94	5·47	1·69	2·98	3·24	6·44	2·60	37·49
Perth	3·33	2·75	1·93	1·38	1·31	1·94	3·58	1·75	2·13	4·22	4·40	1·56	30·28
Fife—**Cupar**	5·00	2·50	2·76	1·48	1·78	1·70	4·46	1·36	2·10	4·56	4·70	1·32	33·72
Kirkcaldy	3·52	2·45	2·63	1·75	·73	1·58	4·08	1·31	1·10	2·10	4·84	1·08	27·12
Kinross—**Loch Leven**	4·01	3·76	2·75	1·49	1·71	1·77	4·84	1·25	1·92	3·45	6·04	1·51	35·40
Clackmannan—													
Tillicoultry	4·16	4·56	2·71	1·66	1·94	2·32	5·76	2·97	2·52	2·70	6·47	1·95	39·75
Argyll—**Gruline (Mull)**	3·98	9·12	6·09	2·81	3·36	3·53	7·20	2·43	3·76	3·74	11·47	7·03	64·82
Oban	2·95	8·92	3·64	2·57	1·45	2·66	8·12	3·51	3·49	1·62	11·75	3·70	54·41
Glencoe Gardens	5·84	12·85	6·85	5·17	2·11	3·68	10·50	3·84	4·01	3·58	13·07	4·74	76·24
Inveraray	5·25	13·75	6·63	4·34	1·61	4·22	10·56	2·41	6·33	4·98	15·09	4·96	80·13
Bute—**Rothesay**	4·35	5·88	4·11	3·06	1·38	2·88	7·24	1·64	4·78	2·15	9·37	3·46	50·30
Stirling—**Stirling**	3·76	4·75	2·75	1·74	1·57	2·11	4·35	1·18	1·79	2·61	7·45	2·04	36·10
Dumbarton—**Arrochar**	7·12	14·71	7·52	4·51	2·27	4·44	9·46	2·98	5·80	5·03	16·20	5·83	85·90
Helensburgh	4·22	6·66	4·77	2·94	1·83	2·95	5·53	1·88	4·82	3·20	8·99	3·92	51·71
Renfrew—**Greenock**	4·96	8·79	4·40	3·66	1·41	1·72	5·39	1·79	3·09	3·63	11·24	3·06	53·14
Paisley	4·94	5·63	3·02	1·98	1·01	1·78	5·02	2·00	1·52	2·61	8·52	2·92	40·95
Ayr—**Kilmarnock**	3·64	5·03	3·52	2·22	·84	2·08	4·60	2·39	2·34	1·30	8·14	2·92	39·02
Ayr	2·15	3·47	2·13	1·37	·62	1·53	3·78	2·82	1·57	·64	6·04	1·84	28·20
Muirkirk	3·33	4·81	4·02	2·09	·56	1·92	4·00	2·83	2·14	2·13	9·18	2·54	39·55
Pinmore	4·47	4·90	4·97	2·32	1·15	2·28	3·27	2·45	2·44	2·65	8·04	2·45	41·39
Lanark—													
Glasgow (Botanic Gdns.)	4·01	4·60	2·59	1·79	1·20	1·99	4·17	1·59	1·98	2·01	6·81	2·31	35·68
Lesmahagow	3·53	4·92	3·43	1·67	·50	1·76	2·65	1·52	1·90	1·49	8·42	1·98	33·77
Biggar	3·58	4·20	2·75	1·32	·73	1·40	4·12	·94	1·34	1·67	7·19	1·71	30·95
Linlithgow—													
Houston House	5·42	3·27	4·05	1·57	·62	1·67	3·85	·98	1·94	2·69	5·45	1·34	32·85
Midlothian—													
Edinburgh (University)	3·61	1·40	2·61	1·09	1·12	1·31	2·19	·96	1·33	1·80	3·51	·93	21·86
Gorebridge	5·12	1·76	3·28	1·71	·81	2·24	1·85	2·48	1·64	3·06	3·62	·87	28·44
Oxenfoord Castle	4·81	1·21	2·79	1·35	·82	1·68	1·99	·96	1·42	3·15	3·27	·73	24·18
Haddington—													
North Berwick	3·73	1·13	1·74	·95	·68	1·62	2·69	1·45	1·48	2·54	2·34	·76	21·11
Stobshiels Reservoir	5·26	1·58	3·67	1·03	·99	3·20	2·23	1·52	2·22	4·88	3·48	1·00	31·06
Berwick—**Duns Castle**	5·67	1·76	2·89	1·30	1·14	2·10	3·31	2·27	1·89	4·01	3·01	1·09	31·04
Marchmont	5·81	1·87	2·92	1·57	·87	1·80	3·50	2·13	1·55	4·19	3·16	1·06	30·43
Peebles—**West Linton**	5·75	3·45	4·28	1·95	·79	1·99	3·24	1·52	2·12	2·98	6·60	1·59	36·26
Selkirk—**Whitmuir Hall**	5·45	2·27	3·33	1·09	1·12	2·35	3·13	1·42	2·02	3·61	4·19	1·24	31·22
Roxburgh—													
Kelso (Broomlands)	4·82	1·23	2·63	1·01	·67	1·63	3·01	1·65	1·00	2·84	2·61	·89	23·99
Wolfelee	6·33	4·43	4·26	1·11	1·25	2·83	3·43	1·74	1·63	3·50	4·74	1·40	36·65
Dumfries—**Dumfries**	5·94	4·72	3·09	1·13	·52	2·87	5·10	1·33	2·27	3·13	6·05	1·58	37·68
Moniaive	6·73	8·78	5·13	2·44	·83	3·30	5·01	1·73	2·89	4·00	10·04	2·92	53·80
Langholm	7·36	7·38	4·81	1·90	1·10	4·82	7·23	2·42	2·70	3·96	7·61	2·75	54·04
Eskdalemuir	6·76	9·26	5·62	2·47	1·20	4·23	7·21	2·34	2·88	3·32	9·28	3·09	57·66
Kirkcudbright—													
Dalbeattie (Drumstinchall)	5·97	5·75	3·43	2·46	·44	3·86	7·22	1·49	3·24	4·21	7·37	2·51	47·95
Carsphairn (Shiel)	8·34	8·83	8·63	3·54	·96	4·17	6·53	2·08	3·00	4·90	14·76	4·30	70·04
Auchencairn	6·62	5·65	3·46	2·20	·19	2·87	4·83	1·60	2·64	4·02	7·92	2·47	44·56
Wigtown—**Monreith**	5·18	3·23	2·64	1·69	1·00	1·71	4·29	1·50	3·71	3·96	4·77	2·43	36·20

AGRICULTURAL STATISTICS.—RETURNED UPON 4TH JUNE 1938—(*Compiled from Government Returns*).

TABLE NO. 1.—ACREAGE UNDER CROPS AND GRASS IN EACH COUNTY OF SCOTLAND.

COUNTIES.	Total Acreage under Crops and Grass.	Arable Land.	Permanent Grass.	CORN CROPS.							Potatoes.	Turnips and Swedes.	Mangolds.	Sugar Beet.	Cabbage.	Rape.	Kale.	Vetches or Tares for Seed.	Vetches, Tares, Mashlum, &c., for Fodder.	Small Fruit.	Rye-grass and other Rotation Grasses and Clover.	Other Crops.	Bare Fallow.
				Wheat.	Barley, including Bere.	Oats.	Mixed Grain	Rye.	Beans.	Peas.	Total Corn Crops.												
	Acres.	Acres.	Acres.	Acres.	Acres.	Acres.	Acs.	Acs.	Acs.	Acs.	Acres.	Acres.	Acres.	Acs.	Acres.	Acs	Acres.	Acs.	Acs.	Acres.	Acres.	Acres.	Acres.	Acres.
1. Aberdeen	617,440	563,919	53,521	188	11,669	172,655	17	39	88	137	184,193	7,224	73,698	32	8	213	336	772	16	785	158	295,490	434	560
2. Angus	241,987	209,401	32,586	16,922	7,852	51,672	63	73	67	38	76,687	20,542	24,768	68	858	268	233	794	2	266	2,168	82,680	402	245
3. Argyll	110,334	44,664	65,670	5	577	13,037	92	254	1	2	13,968	1,833	3,851	8	..	31	316	124	..	69	14	23,724	32	694
4. Ayr	302,734	118,235	184,499	1,635	12	33,086	50	..	84	12	34,879	7,199	5,643	344	4	164	749	355	1	313	135	67,864	298	287
5. Banff	155,123	140,104	15,019	34	8,176	40,000	14	7	20	12	48,263	1,511	17,141	7	33	9	117	140	12	254	19	72,359	20	219
6. Berwick	187,458	122,273	65,185	7,415	9,807	19,442	5	12	136	2	36,819	2,422	14,257	745	643	35	745	725	2	149	28	65,596	28	79
7. Bute	25,566	13,968	11,598	..	1	4,009	4	5	..	2	4,021	887	990	17	..	9	54	78	..	18	9	7,765	19	101
8. Caithness	101,934	76,697	25,237	6	345	22,630	..	3	..	5	22,989	796	8,613	..	..	5	27	62	2	54	1	43,654	112	382
9. Clackmannan	14,677	7,280	7,397	394	80	2,410	29	8	99	1	8,021	288	624	4	1	13	62	11	1	11	47	8,080	9	108
10. Dumfries	240,864	117,109	123,755	317	62	20,145	19	24	1	4	30,572	2,772	11,826	436	20	98	778	459	..	78	43	69,824	67	136
11. Dunbarton	42,728	17,890	24,838	674	6	5,514	20	..	1	2	6,217	1,994	1,038	11	4	31	179	84	..	71	87	8,032	78	69
12. East Lothian	107,254	81,233	26,021	7,104	14,193	10,481	4	2	20	284	32,088	8,094	8,621	949	622	888	294	307	12	84	347	27,052	1,079	596
13. Fife	229,561	150,749	78,812	17,266	8,374	35,699	76	175	131	22	61,743	15,946	15,312	153	3,392	151	431	832	11	326	375	51,204	201	672
14. Inverness	138,545	81,095	57,450	206	2,485	26,137	759	181	..	7	29,775	3,197	6,888	1	30	34	92	301	4	43	18	33,414	104	7,194
15. Kincardine	115,400	103,184	12,216	2,471	5,096	28,390	4	1	10	17	35,989	4,471	13,088	1	110	16	52	347	1	134	52	48,798	45	80
16. Kinross	31,439	19,183	12,256	522	115	5,866	10	35	5	..	6,553	1,325	1,809	5	5	11	159	60	..	23	40	9,164	5	24
17. Kirkcudbright	177,556	77,530	100,026	218	76	18,280	1	1	..	5	18,581	1,097	7,370	197	14	44	691	258	..	96	17	49,049	45	71
18. Lanark	230,039	108,957	121,082	3,072	78	31,824	24	..	20	21	35,039	5,925	7,712	38	1	312	1,054	326	1	244	1,214	55,868	787	436
19. Mid-Lothian	112,395	65,855	46,540	6,441	3,252	14,760	46	21	5	69	24,594	5,375	6,944	212	129	404	587	255	1	101	160	26,317	534	242
20. Moray	95,030	85,201	9,829	2,224	9,361	19,455	106	153	13	5	31,317	1,734	10,937	39	380	11	120	251	2	146	30	39,872	163	199
21. Nairn	24,901	22,412	2,489	144	1,790	5,869	..	6	..	..	7,809	270	3,850	3	51	18	5	47	..	14	2	10,732	17	94
22. Orkney	108,663	90,575	18,088	..	2,042	27,998	6	2	1	5	30,054	1,632	11,013	..	..	9	..	9	..	46	18	47,693	17	84
23. Peebles	47,896	19,829	28,067	41	103	5,011	9	..	..	1	5,165	300	2,221	3	..	28	486	44	..	37	40	11,493	2	10
24. Perth	317,700	204,188	113,512	11,502	1,472	57,157	118	152	656	18	71,075	18,589	19,159	67	525	190	1,010	428	3	505	3,782	67,721	194	940
25. Renfrew	72,879	25,158	47,721	1,749	..	7,141	8	5	23	8	8,934	2,515	1,451	20	2	98	155	137	..	9	49	11,392	258	188
26. Ross & Cromarty	134,921	102,904	32,017	1,350	4,864	28,946	96	100	31	1	35,388	5,349	11,334	24	56	72	93	184	25	171	22	47,463	93	2,630
27. Roxburgh	174,963	103,777	71,186	4,190	4,599	19,057	15	..	34	8	27,903	1,437	12,702	362	354	37	441	296	6	143	46	59,995	22	33
28. Selkirk	30,267	13,463	16,804	4	34	3,389	..	..	..	2	3,429	121	1,731	24	6	5	35	51	..	25	8	8,013	12	3
29. Stirling	106,615	44,251	62,364	2,997	286	14,672	26	15	763	7	18,766	3,040	2,840	17	7	55	451	151	2	339	115	17,791	66	611
30. Sutherland	30,586	19,206	11,380	9	138	5,828	3	..	..	3	5,981	774	1,997	..	..	3	42	33	..	14	1	10,114	25	222
31. West Lothian	51,910	28,631	23,279	3,190	1,576	8,448	5	..	5	5	13,229	2,442	2,452	64	38	33	323	100	..	98	66	9,630	55	101
32. Wigtown	152,048	92,411	59,637	207	38	23,997	33	..	33	1	24,309	1,934	9,320	524	98	26	389	433	..	117	6	54,994	15	246
33. Zetland	28,967	12,159	16,808	..	369	5,347	..	..	..	..	5,716	1,723	996	1	..	614	..	13	..	3	..	2,315	19	759
TOTAL	4,560,380	2,983,491	1,576,889	92,497	98,928	797,752	1,662	1,274	2,247	706	995,066	134,758	321,896	4,396	7,391	3,935	10,506	8,467	104	4,786	9,117	1,459,552	5,252	18,265

TABLE No. 2.—TOTAL PRODUCE OF WHEAT AND BARLEY, ACREAGE and YIELD per Acre in the Year 1938, compared with the YIELD for the Year 1937, and the AVERAGE of the Ten Years, 1928-1937, in each COUNTY of SCOTLAND.

COUNTIES.	WHEAT.					BARLEY, INCLUDING BERE.				
	Total Produce in 1938.	Acreage in 1938.	Yield per acre.		Average of the Ten Years, 1928-1937.	Total Produce in 1938.	Acreage in 1938.	Yield per acre.		Average of the Ten Years, 1928-1937.
			1938.	1937.				1938.	1937.	
	Tons.	Acres.	Cwt.	Cwt.	Cwt.	Tons.	Acres.	Cwt.	Cwt.	Cwt.
Aberdeen	230	188	24.0	20.5	*18.3	10,000	11,669	17.9	18.7	17.2
Angus	17,000	16,922	19.6	19.9	20.4	7,400	7,852	18.7	19.5	18.6
Argyll	3	5	12.0	19.8	*19.4	400	577	13.8	13.8	14.3
Ayr	2,200	1,635	26.7	27.4	25.5	12	12	20.0	15.6	16.5
Banff	36	34	20.9	18.4	†18.3	7,800	8,176	19.0	18.3	18.4
Berwick	8,800	7,415	23.8	21.0	21.4	10,000	9,807	20.8	18.5	18.5
Bute	..	..	..	29.5	‡22.7	..	1	..	19.2	†17.9
Caithness	7	6	24.7	24.1	§26.8	260	345	15.3	15.8	16.1
Clackmannan	380	394	19.3	21.2	24.1	70	80	16.9	18.6	20.9
Dumfries	450	317	28.5	28.9	24.3	57	62	18.4	18.9	16.6
Dunbarton	780	674	21.8	22.3	21.4	4	6	16.0	8.7	*14.0
East Lothian	9,800	7,104	27.7	24.5	24.7	19,000	14,193	26.3	25.6	23.7
Fife	19,000	17,266	22.0	22.6	21.4	9,000	8,374	21.6	20.2	19.6
Inverness	240	206	23.3	24.1	21.6	1,900	2,485	15.1	15.8	13.8
Kincardine	2,100	2,471	17.2	19.4	21.3	4,300	5,096	16.8	15.9	16.5
Kinross	270	522	10.5	17.9	21.3	84	115	14.6	18.3	18.5
Kirkcudbright	240	218	22.0	21.5	20.4	71	76	18.6	19.7	17.6
Lanark	2,900	3,072	18.6	20.4	20.0	62	78	15.9	16.2	15.7
Mid-Lothian	8,800	6,441	27.4	24.7	24.9	3,800	3,252	23.2	23.9	22.1
Moray	2,800	2,224	24.9	24.9	23.5	8,600	9,361	18.3	19.3	18.4
Nairn	160	144	21.6	20.9	‡20.0	1,400	1,790	15.6	16.5	14.8
Orkney	..	..	..	..	..	1,600	2,042	15.5	16.2	16.6
Peebles	50	41	23.9	21.8	*22.5	110	103	21.2	20.5	19.3
Perth	13,000	11,502	22.1	22.8	21.5	1,500	1,472	20.3	20.4	19.9
Renfrew	2,100	1,749	23.7	22.8	22.4	..	..	..	..	‡15.9
Ross and Cromarty	1,500	1,350	22.4	23.4	23.2	4,000	4,864	16.5	16.4	15.6
Roxburgh	4,600	4,190	22.1	23.9	21.7	4,800	4,599	18.6	19.5	19.3
Selkirk	3	4	17.3	21.0	†18.1	27	34	15.7	18.9	16.8
Stirling	2,300	2,997	15.0	23.3	20.5	260	286	18.4	21.8	18.9
Sutherland	7	9	15.5	..	..	120	138	17.1	19.1	17.6
West Lothian	4,400	3,190	27.5	23.9	24.4	1,900	1,576	24.5	22.4	22.9
Wigtown	180	207	17.6	23.7	†22.7	34	38	17.7	5.6	18.3
Zetland	..	..	..	..	..	250	369	13.5	13.7	14.1
Total	104,000	92,497	22.4	22.4	22.0	98,000	98,928	19.9	19.7	18.8

* Average of 9 years only.
† Average of 8 years only.
‡ Average of 6 years only.
§ Average of 5 years only.

TABLE No. 3.—TOTAL PRODUCE OF OATS, ACREAGE and YIELD per Acre in the Year 1938, compared with the YIELD for the Year 1937, and the AVERAGE of the Ten Years, 1928-1937, in each COUNTY OF SCOTLAND.

COUNTIES.	OATS.				
	Total Produce in 1938.	Acreage in 1938.	Yield per acre.		Average of the Ten Years 1928-1937.
			1938.	1937.	
	Tons.	*Acres.*	*Cwt.*	*Cwt.*	*Cwt.*
Aberdeen	136,000	172,055	15·8	15·5	15·6
Angus	48,000	51,672	18·5	19·4	18·8
Argyll	8,600	13,037	13·2	15·3	14·0
Ayr	25,000	33,086	15·4	18·2	17·7
Banff	32,000	40,000	16·2	15·0	16·2
Berwick	15,000	19,442	15·8	14·8	14·9
Bute	2,600	4,009	12·7	18·2	15·2
Caithness	17,000	22,630	14·9	14·6	13·3
Clackmannan . . .	2,100	2,410	17·6	19·8	19·4
Dumfries	31,000	30,145	20·4	19·9	16·6
Dunbarton	3,900	5,514	14·2	16·2	15·2
East Lothian . . .	12,000	10,481	23·3	22·9	21·9
Fife	33,000	35,699	18·3	17·7	18·0
Inverness	16,000	26,137	11·9	12·2	11·3
Kincardine	24,000	28,390	16.9	15·9	17·1
Kinross	3,900	5,866	13·2	16·1	16·3
Kirkcudbright . . .	12,000	18,280	13·2	14·9	13·4
Lanark	23,000	31,824	14·7	15·5	14·6
Mid-Lothian	16,000	14,760	22·0	22·2	20·7
Moray	16,000	19,455	16·0	16·5	16·7
Nairn	4,300	5,869	14·8	14·2	14·3
Orkney	16,000	27,998	11·6	13·5	13·4
Peebles	4,400	5,011	17·4	15·9	15·8
Perth	46,000	57,157	16·2	18·0	17·2
Renfrew	5,600	7,141	15·8	15·6	15·1
Ross and Cromarty . .	20,000	28,946	14·1	14·4	14·4
Roxburgh	13,000	19,057	13·4	14·3	15·1
Selkirk	1,600	3,389	9·7	12·9	12·9
Stirling	7,500	14,672	10·2	16·9	16·9
Sutherland	4,400	5,828	15·1	14·2	13·3
West Lothian . . .	8,800	8,448	20·9	18·7	19·9
Wigtown	21,000	23,997	17·1	15·6	16·4
Zetland	2,800	5,347	10·4	10·7	10·9
Total	633,000	797,752	15·9	16·3	16·0

TABLE No. 4.—TOTAL PRODUCE OF POTATOES, ACREAGE and YIELD per Acre in the Year 1938, compared with the YIELD for the Year 1937, and the AVERAGE of the Ten Years, 1928-1937, in each COUNTY of SCOTLAND.

COUNTIES.	Total Produce in 1938.	Acreage in 1938.	Yield per Acre.		Average of the Ten Years 1928-1937.
			1938.	1937.	
	Tons.	Acres.	Tons.	Tons.	Tons.
Aberdeen	50,000	7,224	7·0	6·8	6·6
Angus	124,000	20,542	6·0	6·1	6·9
Argyll	9,700	1,833	5·3	5·7	5·8
Ayr	50,000	7,199	6·9	7·1	8·0
Banff	9,700	1,511	6·4	5·9	6·1
Berwick	20,000	2,422	8·1	6·1	5·9
Bute	5,300	887	6·0	6·7	6·7
Caithness	4,300	796	5·4	6·2	6·4
Clackmannan	1,800	288	6·2	6·1	6·4
Dumfries	23,000	2,772	8·3	8·0	7·7
Dunbarton	14,000	1,994	7·1	7·4	7·4
East Lothian	73,000	8,094	9·1	8·1	7·8
Fife	133,000	15,946	8·3	7·4	8·0
Inverness	13,000	3,197	3·9	6·2	5·4
Kincardine	27,000	4,471	6·0	5·4	6·0
Kinross	8,000	1,325	6·1	5·9	6·6
Kirkcudbright	6,800	1,097	6·2	6·5	6·7
Lanark	42,000	5,925	7·1	7·8	7·2
Mid-Lothian	47,000	5,375	8·8	8·3	8·1
Moray	9,700	1,734	5·6	5·3	6·1
Nairn	1,200	270	4·4	4·3	4·8
Orkney	10,000	1,632	6·4	6·2	6·4
Peebles	2,400	300	8·1	7·5	7·6
Perth	108,000	18,589	5·8	6·0	6·6
Renfrew	19,000	2,515	7·7	9·1	8·6
Ross and Cromarty	28,000	5,349	5·2	6·3	6·5
Roxburgh	12,000	1,437	8·2	6·6	7·2
Selkirk	800	121	7·0	5·6	6·3
Stirling	22,000	3,040	7·2	7·6	7·7
Sutherland	2,900	774	3·7	6·6	5·9
West Lothian	22,000	2,442	9·0	8·1	8·1
Wigtown	12,000	1,934	6·0	9·2	7·5
Zetland	6,400	1,723	3·7	4·2	5·4
Total	918,000	134,758	6·8	6·8	7·1

TABLE No. 5.—TOTAL PRODUCE of TURNIPS, SWEDES, and MANGOLDS, ACREAGE and YIELD per Acre in the Year 1938, compared with the YIELD for the Year 1937, and the AVERAGE of the Ten Years, 1928-1937, in each COUNTY of SCOTLAND.

COUNTIES	TURNIPS AND SWEDES.					MANGOLDS.				
	Total Produce in 1938.	Acreage in 1938.	Yield per Acre		Average of the Ten Years, 1928-1937.	Total Produce in 1938.	Acreage in 1938.	Yield per Acre.		Average of the Ten Years, 1928-1937.
			1938.	1937.				1938.	1937.	
	Tons.	Acres.	Tons	Tons.	Tons.	Tons.	Acres.	Tons.	Tons.	Tons.
Aberdeen	1,112,000	73,698	15.1	13.5	13.6	360	32	11.0	12.1	13.2*
Angus	513,000	24,768	20.7	19.7	18.0	1,700	88	19.9	21.1	18.1
Argyll	60,000	3,851	15.7	15.7	17.0	150	8	18.5	19.1	16.1
Ayr	93,000	5,643	16.5	17.8	18.7	6,600	344	19.1	21.4	22.4
Banff	308,000	17,141	17.7	15.7	16.2	120	7	17.7	16.7	12.0†
Berwick	331,000	14,257	23.2	19.2	17.8	13,000	745	17.1	17.6	18.6
Bute	16,000	990	16.4	16.9	17.5	350	17	20.0	19.8	19.3
Caithness	168,000	8,613	19.6	21.4	19.9	..	..	..	..	..
Clackmannan	11,000	624	16.9	17.3	15.5	86	4	22.9	10.0	..
Dumfries	219,000	11,826	18.5	17.6	17.0	8,100	436	18.6	19.9	17.3
Dunbarton	14,000	1,038	13.9	16.6	16.7	150	11	13.9	23.8	21.8
East Lothian	196,000	8,821	22.3	18.5	18.0	24,000	949	25.9	23.5	22.3
Fife	262,000	15,312	17.1	16.8	15.2	3,500	153	22.8	29.4	19.7
Inverness	78,000	6,888	11.3	11.8	12.4	9	1	9.0	11.2	..
Kincardine	247,000	13,088	18.9	16.8	17.2	15	1	12.0	10.0	..
Kinross	32,000	1,809	17.5	19.0	15.2	120	5	20.9	13.4	..
Kirkcudbright	86,000	7,370	11.6	14.6	14.2	2,700	197	13.5	15.0	16.3
Lanark	146,000	7,712	18.9	20.2	19.1	590	38	15.7	19.3	19.7
Mid-Lothian	138,000	6,944	19.8	19.3	17.9	5,300	212	25.3	26.6	22.7
Moray	210,000	10,937	19.2	17.2	17.3	760	39	19.7	20.1	19.3
Nairn	35,000	3,350	10.3	10.8	12.0	33	3	11.0	12.5	..
Orkney	145,000	11,013	13.2	10.8	11.5	..	..	..	..	..
Peebles	46,000	2,221	20.7	19.1	18.1	68	3	22.7	20.0	..
Perth	360,000	19,159	18.8	18.5	17.7	1,100	67	16.1	17.2	16.1
Renfrew	27,000	1,451	18.6	19.2	18.9	400	20	20.0	19.8	19.8
Ross and Cromarty	176,000	11,334	15.5	15.8	15.3	360	24	14.8	13.7	13.3
Roxburgh	204,000	12,702	16.1	17.7	15.4	7,800	362	21.5	26.5	20.8
Selkirk	24,000	1,781	13.6	18.2	14.3	430	24	18.0	24.2	18.8
Stirling	44,000	2,840	15.3	18.5	17.7	210	17	12.4	12.0	14.3*
Sutherland	27,000	1,997	13.4	17.9	15.6	..	..	..	..	..
West Lothian	58,000	2,452	23.6	18.4	18.3	1,900	64	29.1	18.7	21.3
Wigtown	128,000	9,320	13.7	16.2	16.1	10,000	524	19.0	21.1	19.6
Zetland	15,000	996	15.4	15.0	12.7	4	1	2.3	..	..
Total	5,524,000	321,896	17.2	16.4	16.0	90,000	4,396	20.5	21.2	20.3

* Average of 9 years only.

† Average of 7 years only.

TABLE No. 6.—TOTAL PRODUCE OF HAY from Rye-Grass and other Rotation Grasses and Clover, also Total from Permanent Grass, ACREAGE, and YIELD per Acre in the Year 1938, compared with the YIELD for the Year 1937, and the AVERAGE of the Ten Years, 1928-1937, in each COUNTY of SCOTLAND.

COUNTIES.	FROM RYE-GRASS AND OTHER ROTATION GRASSES AND CLOVER.					FROM PERMANENT GRASS. (Including Timothy.)				
	Total Produce in 1938.	Acreage in 1938.	Yield per Acre		Average of the Ten Years, 1928-1937.	Total Produce in 1938.	Acreage in 1938.	Yield per Acre.		Average of the Ten Years, 1928-1937.
			1938.	1937.				1938.	1937.	
	Tons.	Acres.	Cwt	Cwt.	Cwt.	Tons.	Acres.	Cwt.	Cwt.	Cwt.
Aberdeen	68,000	55,572	24.4	26.0	25.8	2,100	2,130	19.9	18.2	20.0
Angus	39,000	21,249	36.9	41.2	37.9	2,500	1,583	31.5	34.4	31.6
Argyll	15,000	10,910	27.3	28.9	29.5	18,000	14,758	24.9	25.5	25.4
Ayr	35,000	24,138	29.3	31.0	31.4	47,000	23,249	40.5	42.0	41.9
Banff	18,000	12,169	30 5	29.2	29.5	630	622	20.3	20.6	21.4
Berwick	21,000	13,087	31.6	29.8	33.1	4,600	3,447	26.6	27.7	28.8
Bute	3,800	2,333	32.7	40 0	34.5	1,000	648	31.7	40.0	33.8
Caithness	9,700	9,947	19.4	19.3	18.9	250	762	7.1	9.5	8.4
Clackmannan	2,300	974	48.0	59.2	50.4	2,600	1,115	46.9	60.3	54.6
Dumfries	32,000	19,888	32.7	34.9	33.1	22,000	18,743	23.7	25.4	27 3
Dunbarton	7,200	4,201	31.1	35.2	37.5	4,000	2,225	36.0	37.6	37 3
East Lothian	20,000	8,035	51.0	52.8	48.9	2,100	1,165	36.9	33.0	30.4
Fife	56,000	22,782	49.3	53.1	46.4	10,000	5,081	37.6	44.9	37.5
Inverness	12,000	11,000	21.9	21.7	21.5	7,800	10,394	15.2	15.6	16 7
Kincardine	19,000	11,871	32.6	31.9	31.2	710	437	32.4	26.3	25.3
Kinross	5,700	2,774	40.9	47.9	43.2	1,100	580	38.3	45.7	35.6
Kirkcudbright	15,000	10,563	28.0	29.2	26.9	16,000	11,655	27.9	27.7	26.7
Lanark	48,000	26,006	37.0	39.1	35.8	27,000	15,149	35.1	37.0	33.4
Mid-Lothian	25,000	9,650	50.9	49.5	47.9	4,700	2,670	34.9	34.8	33.5
Moray	8,500	5,758	29.4	31.3	27.5	450	400	22.7	24.4	20.7
Nairn	1,400	1,398	19.5	20.6	20.4	70	106	13.4	14.0	14.4
Orkney	23,000	11,530	39.6	39.7	40.1	670	761	17.7	14.9	16.2
Peebles	5,000	2,473	40.9	35.8	35.3	3,500	2,214	32.1	30.7	29.4
Perth	44,000	30,219	28.9	33.2	30.2	15,000	12,809	23.5	25.7	28.6
Renfrew	14,000	6,195	45.3	44.9	43.9	12,000	5,415	45.8	48.3	45.6
Ross and Cromarty	13,000	12,481	21.7	19.8	20.5	3,600	4,206	17.3	16.8	16.4
Roxburgh	14,000	9,976	27.8	30.0	30.3	8,000	7,845	19.6	24.9	25.3
Selkirk	1,800	1,844	19.5	28.4	26.9	2,000	2,327	17.2	23.2	24.2
Stirling	16,000	8,736	36.7	41.3	38.7	20,000	9,417	42.1	46.2	46.0
Sutherland	4,300	4,504	19.2	16.4	18.6	1,700	1,915	18.0	15.4	16.2
West Lothian	15,000	5,705	51.0	47.8	47.6	3,300	1,503	43.3	37.9	41.0
Wigtown	18,000	7,485	47.6	46.8	38.6	11,000	5,355	42.8	46.7	34.1
Zetland	2,300	1,788	25.8	28.6	29.9	2.300	2,501	18.0	18.4	18.5
Total	632,000	386,691	32.7	34.3	32.8	285,000	173,122	29.9	31.4	30.8

TABLE No. 7.—HAY from Timothy Meadows:—TOTAL PRODUCE, ACREAGE, and YIELD PER ACRE, in 1938, in each COUNTY OF SCOTLAND, compared with the YIELD for 1937, and the AVERAGE of the Ten Years, 1928-1937.

COUNTIES.	HAY FROM TIMOTHY MEADOWS. (Also included with Permanent Grass.)				
	Total Produce in 1938.	Acreage in 1938.	Yield per acre.		Average of the Ten Years, 1928-1937.
			1938.	1937.	
	Tons.	*Acres.*	*Cwt.*	*Cwt.*	*Cwt.*
Aberdeen	340	222	30·4	27·6	31·5
Angus	790	415	37·8	42·8	40·7
Argyll	1,200	710	33·2	36·7	33·2
Ayr	32,000	13,888	46·7	47·8	47·6
Banff	8	7	22·0	20·2	..
Berwick	520	397	26·1	27·4	28·0
Bute	170	96	35·8	40·0	34·7
Caithness	16	25	13·1	10·0	..
Clackmannan	2,300	913	50·0	64·6	57·5
Dumfries	5,400	3,691	29·0	31·4	31·2
Dunbarton	2,200	1,025	43·4	46·3	46·3
East Lothian	600	232	52·1	46·3	49·8
Fife	5,300	2,157	49·4	54·0	49·6
Inverness	40	39	20·2	17·4	..
Kincardine	210	100	42·2	39·5	38·0*
Kinross	510	238	43·0	50·5	40·3
Kirkcudbright	4,300	2,363	35·9	35·3	35·5
Lanark	19,000	9,456	40·0	41·5	39·1
Mid-Lothian	2,400	930	51·1	45·0	48·6
Moray	140	57	50·0	54·0	..
Nairn	..	..	..	..	..
Orkney	32	42	14·9	..	..
Peebles	1,000	468	44·2	40·3	40·4
Perth	5,000	4,565	22·0	25·7	40·4
Renfrew	9,400	4,014	46·8	51·4	48·5
Ross and Cromarty	30	29	22·8	19·5	22·0†
Roxburgh	590	427	27·8	31·1	30·2
Selkirk	220	169	25·4	30·3	28·7
Stirling	15,000	6,432	47·7	51·2	53·8
Sutherland	30	34	18·4	17·0	..
West Lothian	2,200	825	53·4	50·4	51·7
Wigtown	2,600	1,030	50·6	50·5	42·5
Zetland	..	..	..	..	..
Total	114,000	54,996	41·6	43·6	44·0

* Average of 6 years only. † Average of 8 years only.

TABLE No. 8.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS IN EACH COUNTY OF SCOTLAND AS RETURNED ON 4TH JUNE 1938.

COUNTIES.	Horses (including Ponies).					Cattle.							Sheep.				Pigs.		
	Used solely for Agriculture, &c.*	Stallions.†	Unbroken Horses.		Other Horses.	Cows in Milk.	Cows in Calf, but not in Milk.	Heifers in Calf.	Bulls used for Service.	Other Cattle.			Ewes kept for Breeding.	Rams to be used for Service.	Other Sheep.		Sows kept for Breeding.	Boars used for Service.	Other Pigs.
			1 Year & above.	Under 1 Year.						2 Years & above	1 Year & under 2 Years.	Under 1 Year.			1 Year and above.	Under 1 Year.			
1. Aberdeen . .	16,188	82	3,323	1,348	1,758	35,672	3,762	4,133	1,473	41,963	58,879	39,395	161,076	5,289	49,667	209,960	4,071	353	30,738
2. Angus . . .	5,897	12	458	152	286	9,848	1,127	1,250	463	19,009	12,445	8,865	86,892	3,162	19,966	102,353	2,184	164	18,950
3. Argyll . . .	3,142	18	662	276	333	15,439	2,391	2,220	800	4,964	9,300	12,226	325,272	9,835	81,886	252,133	343	40	2,878
4. Ayr . . .	5,690	41	1,099	388	794	45,230	7,437	16,415	2,529	8,867	22,465	25,189	190,910	5,149	49,034	189,392	1,815	156	13,481
5. Banff . . .	4,691	10	954	471	711	10,239	1,014	793	445	5,687	14,303	12,329	49,330	1,568	16,062	61,859	1,000	92	6,344
6. Berwick . .	2,671	15	367	117	462	5,666	684	879	346	6,943	7,827	6,132	145,903	3,982	50,065	208,001	1,020	128	6,068
7. Bute . . .	715	3	180	53	85	2,660	441	813	189	884	2,070	2,236	20,777	603	6,659	17,730	59	10	441
8. Caithness . .	3,148	27	756	305	297	6,329	639	416	195	1,322	5,196	6,649	94,741	2,715	27,803	117,670	244	27	1,768
9. Clackmannan .	311	2	73	26	93	1,217	169	281	65	759	1,456	602	6,725	280	1,811	7,090	271	19	1,180
10. Dumfries . .	4,066	21	904	325	605	22,453	3,151	8,887	1,381	9,358	18,238	20,060	265,418	7,148	69,385	270,671	2,149	166	12,518
11. Dunbarton . .	984	21	173	68	118	5,243	1,140	1,524	310	1,158	2,877	2,618	33,997	1,081	8,381	28,556	510	48	4,271
12. East Lothian .	2,201	3	216	62	156	2,279	314	261	125	6,918	3,805	2,120	56,887	1,561	24,226	76,629	770	74	4,717
13. Fife . . .	5,234	16	1,033	266	534	12,232	1,973	1,973	641	13,636	11,658	9,648	59,846	2,109	17,168	79,920	1,724	188	11,352
14. Inverness . .	4,966	28	713	275	538	18,922	2,436	1,081	620	2,415	8,416	13,929	237,348	7,165	67,930	185,452	384	43	2,985
15. Kincardine . .	2,692	4	431	152	240	5,523	619	451	238	7,830	8,962	6,550	34,416	978	6,095	43,173	693	52	4,660
16. Kinross . .	595	4	117	42	34	1,394	391	248	80	895	2,009	1,113	16,455	533	5,335	18,609	146	16	807
17. Kirkcudbright .	2,701	23	641	213	303	18,519	1,508	7,274	1,042	8,854	15,432	13,044	172,301	4,783	46,720	176,741	1,236	136	12,585
18. Lanark . .	4,714	33	861	289	510	29,210	6,978	8,924	1,686	7,680	14,201	14,780	111,089	2,966	31,794	115,042	1,552	127	11,619
19. Mid-Lothian .	2,059	8	219	66	367	6,501	1,003	1,009	267	3,385	4,027	2,761	77,482	1,835	28,311	96,827	1,943	172	19,340
20. Moray . . .	2,582	6	480	202	227	5,431	681	559	239	2,940	8,220	5,241	19,901	564	6,058	22,004	611	51	4,528
21. Nairn . . .	734	5	174	65	79	1,973	198	201	101	361	1,912	1,833	6,253	552	2,730	5,910	155	19	1,006
22. Orkney . .	4,397	31	941	468	573	9,806	1,157	909	258	5,012	10,921	10,577	32,798	1,021	9,300	45,886	319	35	2,413
23. Peebles . .	550	1	58	23	49	1,751	227	679	121	848	1,894	1,663	89,600	2,334	21,367	89,848	110	9	1,218
24. Perth . . .	7,156	42	971	374	799	16,052	2,477	2,832	961	14,028	20,399	17,179	288,885	9,497	74,036	267,883	1,588	173	11,266
25. Renfrew . .	1,582	9	303	78	222	10,870	2,768	2,921	608	1,559	4,214	4,693	20,204	596	4,517	21,030	860	69	8,215
26. Ross & Cromarty	3,667	15	548	164	493	13,452	2,110	971	391	2,473	7,229	7,925	149,813	4,910	60,647	140,609	628	58	3,952
27. Roxburgh . .	2,352	10	303	93	593	6,493	958	1,099	394	6,012	6,351	6,775	233,256	5,926	71,767	280,754	484	50	3,641
28. Selkirk . .	404	1	38	14	102	1,296	220	315	73	376	933	1,051	87,732	1,994	20,657	84,057	54	6	491
29. Stirling . .	2,429	31	495	176	368	9,049	2,106	3,116	583	6,424	8,645	6,484	55,390	1,751	13,710	54,737	931	84	6,518
30. Sutherland . .	1,212	2	141	41	107	3,061	574	269	73	285	1,398	1,717	93,031	2,388	38,386	84,649	37	4	399
31. West Lothian .	1,217	6	216	52	175	4,119	791	1,012	238	3,118	2,870	2,205	7,605	204	4,878	9,967	514	52	4,614
32. Wigtown . .	3,048	26	674	318	180	27,655	1,804	4,430	1,134	6,481	10,338	12,591	67,470	2,022	15,632	69,481	1,475	150	14,600
33. Zetland . .	1,434	13	138	41	1,015	3,906	634	263	58	550	1,599	2,167	84,898	2,851	30,133	69,690	6	1	110
Total . . .	105,429	569	18,611	7,003	13,201	369,490	58,877	78,408	18,127	202,993	310,489	282,347	3,383,696	99,357	982,116	3,504,813	29,984	2,772	224,618

* Including Mares kept for breeding.

† Above two years old used, or intended to be used, for service.

TABLE NO. 9.—QUANTITY AND VALUE OF CORN, &c., imported into the United Kingdom in the undermentioned Years.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1937.	**1938**	**1939.**	**1937.**	**1938.**	**1939.**
Wheat from—	Cwt.	Cwt.	Cwt. *Detailed figures not available at date of publication.*	£	£	£ *Detailed figures not available at date of publication.*
British India	6,273,617	4,397,217		3,194,020	1,606,138	
Australia	22,388,923	31,005,730		11,510,096	11,936,041	
Canada	34,257,186	28,853,371		19,157,988	11,212,121	
Other British Countries	387,712	17		200,105	21	
Soviet Union	8,123,387	9,537,670		3,901,101	3,055,370	
Germany	423,024	261		206,943	253	
France	385,716	1,235,815		173,583	267,633	
Roumania	2,272,488	3,606,515		1,028,375	735,101	
United States of America	3,491,927	15,789,880		1,687,001	6,740,275	
Argentine Republic	15,471,538	5,810,656		7,206,171	2,507,483	
Other Foreign Countries	3,383,068	1,412,421		1,578,853	557,716	
Total	96,858,586	101,649,553		49,844,186	38,618,152	
Wheat products—						
Meal and flour from—						
Australia	3,313,587	2,930,994		1,996,119	1,420,386	
Canada	4,043,848	3,658,485		2,861,386	2,090,739	
Other British Countries	32,521	5,819		19,490	2,199	
France	404,273	180,204		220,007	52,785	
Italy	980	..		452	..	
United States of America	107,607	394,094		75,306	225,055	
Argentine Republic	409,920	389,314		161,765	142,973	
Other Foreign Countries	227,817	122,995		114,617	46,407	
Total	8,510,053	7,677,895		5,449,142	3,930,544	
Barley	18,176,124	19,862,277		7,265,827	6,861,099	
Oats	1,207,844	1,572,797		485,874	536,725	
Peas, not fresh	1,434,313	1,944,738		1,005,144	1,140,684	
Beans, not fresh	747,057	956,176		459,388	502,186	
Maize	71,671,479	57,628,180		21,411,441	17,709,955	
Maize products	5,061,657	3,850,108		2,142,633	1,627,572	
Oat products	464,836	599,610		565,564	773,380	
Rice	2,311,723	2,677,091		1,224,908	1,186,545	
Other kinds of grain	489,071	421,605		189,658	171,261	
Other products	505,244	549,740		374,058	818,049	
Farinaceous substances not elsewhere specified and Malt	982,694	824,788		649,362	508,287	
Total of corn, &c.	103,052,042	90,887,100		36,078,852	31,835,748	
Total of Group	208,450,681	200,214,548	..	91,367,180	74,434,489	55,495,075

TABLE NO. 10.—SUMMARY OF TOTAL VALUES APPEARING IN TABLE NO. 9 OF GRAIN AND FLOUR imported into the United Kingdom for the years 1937, 1938 and 1939.

	1937.	1938.	1939.
From—	£	£	£
Union of South Africa	2,665,153	1,540,816	*Detailed figures not available at date of publication.*
Southern Rhodesia	419,234	209,503	
Kenya	69,471	194,826	
British India	4,300,826	2,595,688	
British Malaya	364,638	194,083	
Australia	14,090,939	14,398,155	
Canada	25,090,957	18,573,347	
Other British Countries	199,353	234,058	
Soviet Union	4,465,033	4,187,412	
Denmark	864,569	432,056	
Poland	228,054	97,261	
Germany	236,978	17,400	
Netherlands	917,890	1,466,862	
Java	220,240	146,676	
Belgium	1,023,713	1,353,793	
France	488,001	395,434	
Madagascar	156,894	114,557	
Spain	36	3	
Italy	24,549	18,606	
Bulgaria	545,567	136,746	
Roumania	1,441,148	1,312,731	
Iraq	2,051,466	995,361	
Iran	62,354	12,752	
Japan	315,886	224,521	
United States of America	3,887,680	15,624,074	
Chile	242,969	183,585	
Argentine Republic	26,465,366	8,195,614	
Other Foreign Countries	1,028,716	1,578,519	
Total	91,367,180	74,434,439	55,495,075

TABLE NO. 11.—SUMMARY OF TOTAL VALUES APPEARING IN TABLE NO. 16 OF DAIRY PRODUCE imported into the United Kingdom for the years 1937, 1938 and 1939.

	1937.	1938.	1939.
From—	£	£	£
Eire	2,347,172	3,326,476	*Detailed figures not available at date of publication.*
Union of South Africa	510,840	376,867	
Australia	8,653,202	11,116,092	
New Zealand	21,082,974	20,330,566	
Canada	3,097,248	3,008,634	
Other British Countries	241,069	245,187	
Soviet Union	1,258,328	..	
Finland	992,855	1,303,549	
Estonia	805,118	950,905	
Latvia	1,063,492	1,644,940	
Lithuania	1,137,593	1,259,027	
Sweden	1,174,508	1,735,068	
Norway	56,696	135,147	
Denmark	16,729,443	18,062,690	
Poland	1,184,258	1,848,545	
Germany	31,717	6,750	
Netherlands	7,469,233	8,523,735	
Belgium	338,733	89,101	
France	82,401	99,538	
Switzerland	118,936	125,272	
Italy	277,432	322,273	
China	2,821,511	2,997,045	
United States of America	63,343	153,670	
Argentine Republic	631,176	721,205	
Other Foreign Countries	785,701	1,616,675	
Total	72,904,974	79,998,957	76,050,261

TABLE No. 12.—QUANTITIES AND VALUES OF CORN AND FOOD PRODUCTS imported into the United Kingdom in the Year 1939, with the Corresponding Figures for 1937 and 1938.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1937.	**1938.**	**1939.**	**1937.**	**1938.**	**1939.**
ANIMALS, LIVING, FOR FOOD:—	No.	No.	No.	£	£	£
Cattle	650,049	646,680		6,278,322	8,374,650	
Sheep and lambs	311,752	298,432		551,090	484,599	
Swine	42,524	48,186		179,811	224,746	
Total	1,004,325	993,298		7,004,223	9,083,995	10,993,699
GRAIN, FLOUR, &c.:—	Cwt.	Cwt.		£	£	
Wheat	96,858,586	101,649,553	*Detailed figures not available at date of publication.*	49,844,186	38,618,152	*not available at date of publication.*
Wheat meal and flour	8,540,053	7,677,895		5,449,142	3,980,544	
Barley	18,176,124	19,862,277		7,265,827	6,861,099	
Oats	1,207,844	1,572,797		485,874	536,725	
Peas, not fresh	1,434,313	1,944,733		1,005,144	1,140,684	
Beans, not fresh	747,057	956,176		459,383	502,186	
Maize or Indian corn	71,671,479	57,628,180		21,411,441	17,709,955	
Maize products	5,061,657	3,850,103		2,142,633	1,627,572	
Oat products	464,836	599,610		565,564	773,380	
All other products	505,244	549,740		674,058	818,049	
Rice	2,311,723	2,677,091		1,224,908	1,186,545	
Other kinds of grain	489,071	421,605		189,658	171,261	
Farinaceous substances not elsewhere specified	982,694	824,788		640,862	508,287	
Total	208,450,681	200,214,548		91,367,180	74,434,439	55,495,075
DAIRY PRODUCE:—	Cwt.	Cwt.		£	£	
Butter	9,417,669	9,508,511		47,362,965	50,834,739	*Detailed figures*
Margarine	101,497	108,884		169,559	150,254	
Cheese	2,935,907	2,928,114		9,252,915	9,683,627	
Cream	75,691	52,987		275,840	251,891	
Milk, condensed, unsweetened	328,133	316,404		547,581	620,596	
Milk, condensed, sweetened	114,644	100,228		182,046	191,099	
Milk, separated or skimmed	1,243,245	1,217,582		499,867	1,641,049	
Milk powder, unsweetened	292,291	355,054		589,613	708,598	
Other Produce not specified	..	..		66,445	139,404	
Total value	..	..		59,946,831	64,221,257	76,050,261
	Thous. doz.	Thous. doz		£	£	
EGGS in Shell	247,417	276,974		10,443,254	12,373,875	
	Cwt.	Cwt.				
EGGS not in Shell	880,867	973,825		2,514,889	3,403,825	
Total value	..	..	..	12,958,143	15,777,700	

TABLE No 13.—QUANTITIES AND VALUES OF MEAT OF ALL KINDS imported into the United Kingdom in the year 1939, with the corresponding figures for 1937 and 1938.

	Quantities.			Values.		
	1937.	1938.	1939.	1937.	1938.	1939.
BEEF:—	Cwt.	Cwt.	Cwt.	£	£	£
Fresh and salted	4,224	5,428	Detailed figures not available at date of publication.	6,685	7,120	Detailed figures not available at date of publication.
Chilled	8,969,699	8,962,451		17,057,627	17,671,681	
Frozen	1,758,834	1,834,319		2,658,831	2,637,889	
Boned	855,260	913,235		1,437,236	1,611,509	
Other descriptions	743,286	754,957		1,492,273	1,778,138	
Tinned, canned, &c.—						
Tongues	105,528	83,315		891,866	733,099	
Other parts	977,081	1,000,968		2,547,840	2,654,619	
Extracts and Essences	44,809	64,754		254,923	363,127	
VEAL	425,423	433,623		1,045,442	1,109,022	
MUTTON AND LAMB:—						
Mutton and Lamb—fresh	15,620	24,047		56,758	84,661	
Mutton—frozen	1,490,225	1,605,184		2,776,393	2,811,171	
Lamb—frozen	5,302,498	5,284,812		16,134,916	16,392,997	
Tinned, canned, &c.	72,886	118,597		226,293	333,521	
Other descriptions	205,416	225,961		603,768	663,392	
PIG PRODUCTS—						
Bacon	6,926,042	6,868,467		29,286,727	30,920,757	
Hams	674,092	664,474		3,153,893	3,016,269	
Pork—fresh	54,470	36,844		148,700	129,431	
Pork—chilled or frozen	1,057,159	1,180,805		3,250,389	3,680,289	
Tinned, canned, &c.	150,365	158,995		1,048,813	1,181,158	
Other descriptions	174,906	185,203		317,060	418,064	
RABBITS, fresh and frozen	217,869	253,036		365,161	457,292	
ALL OTHER KINDS OF MEAT	43,215	40,052		180,185	172,201	
POULTRY—dead	505,888	445,483		1,980,841	1,747,417	
GAME—dead	29,950	25,399		136,784	120,662	
Totals	30,813,245	30,970,434	..	87,058,849	90,695,481	93,262,310

TABLE No. 14.—SUMMARY OF TOTAL VALUES appearing in Table 13 of Meat imported into the United Kingdom for the years 1937, 1938 and 1939.

	Values.		
	1937.	1938.	1939.
From—	£	£	£
Eire	2,492,213	3,074,582	Detailed figures not available at date of publication.
Australia	10,227,860	11,023,785	
New Zealand	14,344,000	14,682,592	
Canada	7,680,612	6,962,548	
Other British Countries	391,805	294,296	
Soviet Union	248,844	82,938	
Latvia	154,627	165,077	
Lithuania	831,129	869,683	
Sweden	1,095,408	1,160,581	
Denmark	15,743,871	16,260,062	
Poland	2,182,745	2,462,296	
Netherlands	2,281,692	2,521,416	
France	112,614	90,759	
Hungary	761,065	695,840	
United States of America	2,544,487	3,366,443	
Chile	504,450	473,520	
Brazil	1,423,090	1,587,338	
Uruguay	2,337,974	2,504,589	
Argentine Republic	20,577,754	21,255,834	
Other Foreign Countries	1,172,609	1,161,402	
Totals	87,058,849	90,695,481	93,262,310

TABLE No. 15.—QUANTITY AND VALUE OF DEAD MEAT imported into the United Kingdom in the undermentioned Years.

	Quantities.			Values.		
	1937.	1938.	1939.	1937.	1938.	1939.
BEEF: –	Cwt.	Cwt.	Cwt.	£	£	£
Fresh and salted— Total . .	4,224	5,423		6,635	7,120	
Chilled and frozen, from—						
Australia . . .	1,777,716	1,725,262		2,827,245	2,890,111	
New Zealand . .	552,432	568,832		908,242	978,755	
Other British Countries . . .	151,130	111,872		268,535	209,672	
Brazil . . .	504,718	521,253		921,902	988,688	
Uruguay . . .	637,663	630,592		1,141,247	1,180,785	
Argentine Republic .	7,104,878	7,039,489		13,649,285	14,061,559	
Other Foreign Countries . . .	1	..		2	..	
Total . .	10,728,538	10,596,800		19,716,458	20,309,570	
Boned, including Cheeks and Skirts, from—			*Detailed figures not available at date of publication.*			*Detailed figures not available at date of publication.*
Australia . . .	403,601	467,050		693,316	848,342	
New Zealand . .	270,666	336,064		449,470	572,718	
Other British Countries . . .	114,803	24,153		180,200	39,448	
Brazil . . .	23,144	33,215		37,953	53,705	
Uruguay . . .	17,811	14,051		32,260	28,107	
Argentine Republic	25,219	38,564		44,014	68,896	
Other Foreign Countries . . .	16	138		23	298	
Total . .	855,260	913,235		1,437,280	1,611,509	
Tongues and other descriptions from—						
Australia . . .	87,530	91,702		192,518	219,270	
New Zealand . .	23,086	22,105		47,484	52,479	
Other British Countries . . .	29,622	19,567		61,201	55,516	
United States of America . .	24,788	31,486		64,147	110,309	
Brazil . . .	76,250	78,335		149,834	206,136	
Uruguay . . .	31,883	37,076		67,981	81,150	
Argentine Republic	466,831	472,390		903,759	1,049,171	
Other Foreign Countries . . .	2,696	2,296		5,846	4,098	
Total . .	743,286	754,957		1,492,273	1,778,138	
Tinned, canned, &c.— Tongues – Total .	105,528	83,815		891,866	783,099	
Other, including Extracts & Essences Total . .	1,021,390	1,065,722		2,802,768	3,017,746	
VEAL—all descriptions Total	425,423	433,623		1,015,442	1,109,022	
MUTTON AND LAMB— Fresh—Total . .	15,620	24,047		56,753	84,661	

TABLE No. 15.—QUANTITY AND VALUE OF DEAD MEAT—*Continued.*

	Quantities.			Values.		
	1937.	1938.	1939.	1937.	1938.	1939.
MUTTON—Frozen, from—	Cwt.	Cwt.	Cwt.	£	£	£
Australia . . .	405,929	367,078	*Detailed figures not available at date of publication.*	727,408	622,989	*Detailed figures not available at date of publication.*
New Zealand . .	862,182	1,014,873		1,638,107	1,779,394	
Other British Countries . . .	4,582	2,605		8,482	4,194	
Chile	94,201	96,594		163,122	166,009	
Uruguay . . .	16,553	23,713		28,128	43,859	
Argentine Republic	110,907	98,897		202,884	192,276	
Other Foreign Countries . . .	4,871	1,424		8,762	,2,500	
Total . .	1,499,225	1,605,184		2,776,893	2,811,171	
LAMB—Frozen from—						
Australia . . .	1,476,615	1,532,034		4,349,418	4,572,915	
New Zealand . .	2,740,202	2,660,949		8,753,793	8,744,555	
Other British Countries . . .	4,174	7,312		11,704	17,831	
Chile	115,682	99,199		312,972	287,386	
Uruguay . . .	148,876	147,633		419,469	411,699	
Argentine Republic	778,943	794,786		2,179,470	2,245,353	
Other Foreign Countries . . .	38,006	42,949		108,090	113,258	
Total . .	5,302,498	5,284,812		16,134,916	16,392,997	
Tinned, Canned, &c. Total . .	72,886	118,597		226,298	333,521	
Other Descriptions Total . .	205,416	225,961		603,768	663,392	
PIG PRODUCTS:—						
Bacon, from—						
Eire	509,837	536,764		1,623,146	2,188,348	
Canada . . .	1,387,851	1,275,573		5,618,946	5,515,926	
Other British Countries . . .	468	355		2,062	1,261	
Estonia . . .	40,506	42,120		167,454	181,865	
Latvia . . .	37,096	37,209		154,170	162,129	
Lithuania . . .	187,947	190,050		774,318	816,577	
Sweden . . .	250,046	251,048		1,080,637	1,144,118	
Denmark . . .	3,429,457	3,389,192		15,367,735	15,940,376	
Poland . . .	442,358	456,224		1,827,058	1,968,292	
Netherlands . .	481,061	514,488		2,071,447	2,336,720	
United States of America . .	6,939	42,821		27,506	158,232	
Other Foreign Countries . .	152,476	132,673		572,158	506,914	
Total . .	6,926,042	6,868,467		29,286,727	30,920,757	
Hams, from—						
Eire	15,628	15,537		60,152	70,650	
Canada . . .	313,867	232,083		1,497,358	1,097,709	
Other British Countries . . .	..	1		11	8	
Poland . . .	2,751	781		12,982	3,329	
United States of America . .	311,584	395,261		1,456,721	1,758,778	
Argentine Republic.	29,229	17,946		119,603	71,098	
Other Foreign Countries . . .	1,033	2,865		7,066	14,697	
Total . .	674,092	664,474		3,153,893	3,016,269	
Pork—Fresh Total . .	54,470	36,844		148,700	129,431	

TABLE No. 15.—QUANTITY AND VALUE OF DEAD MEAT—*Continued.*

	Quantities.			Values		
	1937.	1938.	1939.	1937.	1938.	1939.
PIG PRODUCTS (*contd.*)— Pork—Chilled or frozen, from—	Cwt.	Cwt.	Cwt.	£	£	£
Australia . . .	233,718	284,131	*Detailed figures not available at date of publication.*	691,033	831,639	*Detailed figures not available at date of publication.*
New Zealand . .	592,587	577,480		1,739,845	1,768,227	
Other British Countries . . .	7,824	8,201		31,446	84,212	
United States of America . .	21,706	62,002		93,859	230,798	
Argentine Republic	193,979	238,829		672,446	735,892	
Other Foreign Countries . . .	7,345	10,162		21,760	29,521	
Total . .	1,057,159	1,180,805		3,250,389	3,680,289	
Tinned, Canned, &c. Total . .	150,365	158,995		1,048,813	1,181,153	
Other descriptions Total . .	174,906	185,203		317,060	418,064	
RABBITS—Fresh Total . .	94,762	59,827		181,334	146,685	
Frozen, from—						
Australia . . .	104,060	158,880		154,920	252,288	
Other British Countries . . .	18,326	34,458		26,381	56,946	
Foreign Countries .	781	871		2,526	1,373	
Total . .	123,167	193,209		183,827	310,607	
ALL OTHER KINDS OF MEAT— Tinned, Canned, &c. Total . .	43,215	40,052		180,185	172,201	
POULTRY—Dead from—						
Eire	103,073	101,989		430,003	458,915	
Other British Countries . . .	41,678	15,182		209,621	87,806	
Soviet Union . .	29,872	5,579		81,294	17,426	
Netherlands . .	10,201	24,427		45,336	110,034	
Austria . . .	437	447		1,884	1,862	
Hungary . . .	181,023	173,920		679,107	620,610	
Yugoslavia . .	45,028	43,296		159,385	141,856	
Other Foreign Countries . . .	94,576	80,643		374,211	308,908	
Total . .	505,888	445,483		1,980,841	1,747,417	
GAME—Dead Total . .	29,950	25,399		136,784	120,662	
TOTAL of all Meat .	30,813,245	30,970,434	..	87,058,849	90,695,481	93,262,310

TABLE No. 16.—QUANTITIES AND VALUES OF BUTTER, MARGARINE, CHEESE, MILK PRODUCTS, AND EGGS imported into the United Kingdom in each Year from 1937 to 1938 inclusive.

[*From Trade and Navigation Returns.*]

	Quantities.			Values.		
	1937.	1938.	1939.	1937.	1938.	1939.
BUTTER from—	Cwt.	Cwt.	Cwt.	£	£	£
Eire	319,977	326,604	*Detailed figures not available at date of publication.*	1,311,713	1,914,837	*Detailed figures not available at date of publication.*
Union of South Africa	69,127	25,312		312,556	146,196	
Australia	1,491,234	1,797,875		7,522,420	9,630,407	
New Zealand	2,950,843	2,582,560		15,353,109	14,476,400	
Canada	31,861	30,017		209,272	158,028	
Other British Countries	46,739	40,771		237,083	235,349	
Soviet Union	273,365	...		1,258,328	...	
Finland	157,872	209,714		762,309	1,056,909	
Estonia	159,882	183,159		777,445	883,397	
Latvia	216,880	339,899		1,036,045	1,596,885	
Lithuania	204,527	228,111		977,385	1,084 748	
Sweden	205,288	300,277		1,032,147	1,523,101	
Denmark	2,258,848	2,365,291		11,910,608	12,964,470	
Poland	105,295	199,073		485,142	928,692	
Netherlands	716,593	712,110		3,293,755	3,466,433	
Argentine Republic	129,315	89,876		502,137	406,839	
Other Foreign Countries	80,523	77,862		381,511	362,048	
Total	9,417,669	9,508,511		47,362,965	50,834,739	
MARGARINE—	Cwt.	Cwt.		£	£	
Total	101,497	108,884		169,559	150,254	
CHEESE from—	Cwt.	Cwt.		£	£	
Australia	119,580	237,668		351,914	751,194	
New Zealand	1,730,723	1,639,486		5,391,033	5,466,696	
Canada	721,671	678,130		2,457,532	2,331,142	
Other British Countries	32,366	43,113		100,288	143,626	
Netherlands	217,252	202,339		434,271	417,345	
Switzerland	17,183	18,037		109,155	112,960	
Italy	61,729	70,441		274,793	317,990	
Other Foreign Countries	35,453	38,900		133,929	142,674	
Total	2,935,907	2,928,114		9,252,915	9,683,627	
CREAM—	Cwt.	Cwt.		£	£	
Total	75,691	52,987		275,840	251,891	
MILK—Condensed—Unsweetened	Cwt.	Cwt.		£	£	
Total	328,183	316,404		547,581	620,596	
Sweetened—Whole—	Cwt.	Cwt.		£	£	
Total	114,644	100,228		182,046	191,099	

TABLE NO. 16.—QUANTITIES AND VALUES OF BUTTER, &c.—*Continued.*

	Quantities.			Values.		
	1937.	**1938.**	**1939.**	**1937.**	**1938.**	**1939.**
MILK—separated or skimmed—Total .	Cwt. 1,243,245	Cwt. 1,217,532	Cwt.	£ 1,499,867	£ 1,641,049	£
MILK POWDER—unsweetened—Total .	Cwt. 292,291	Cwt. 355,054		£ 589,613	£ 708,598	
EGGS IN SHELL from—	Thous. doz.	Thous. doz		£	£	
Eire . .	19,492	22,180	*Detailed figures not available at date of publication.*	667,880	994,570	*Detailed figures not available at date of publication.*
Union of South Africa . .	2,567	2,709		150,119	156,714	
Australia .	12,628	10,099		720,676	599,991	
Other British Countries .	1,523	1,754		88,040	102,768	
Finland . .	5,019	5,175		218,644	234,516	
Sweden . .	3,328	4,847		142,237	207,556	
Denmark .	99,977	95,110		4,396,213	4,643,118	
Poland . .	22.568	26,211		699,116	878,439	
Netherlands .	43,096	59,329		1,944,182	2,699,408	
Belgium . .	4,363	1,074		203,205	51,280	
China . .	10,905	2,982		396,071	114,449	
Other Foreign Countries .	21,951	45,504		816,871	1,691,066	
Total .	247,417	276,974		10,443,254	12,373,875	
EGGS NOT IN SHELL—Liquid or frozen from—	Cwt.	Cwt.		£	£	
British Countries . .	2,636	7,293		6,631	27,095	
China . .	822,654	794,345		2,112,505	2,569,395	
Other Foreign Countries .	21,889	142,571		60,571	461,632	
Total .	847,179	944,209		2,179,707	3,058,122	
EGGS—other sorts Total .	Cwt. 33,638	Cwt. 29,616		£ 335,182	£ 345,703	
OTHER KINDS OF DAIRY PRODUCE—Total .	...	...		£ 66,445	£ 139,404	
Total Value of Dairy Produce	...	...	...	72,904,974	79,998,957	76,050,261

TABLE No. 17.—OTHER ARTICLES AFFECTING AGRICULTURE.

	Quantities.			Values.		
	1937.	1938.	1939.	1937.	1938.	1939.
FRUIT, VEGETABLES, &c.:—						
Apples	Cwt. 5,479,439	Cwt. 7,094,802	Cwt.	£ 4,875,230	£ 6,066,102	£
Peaches and Nectarines	99,887	106,206		241,618	251,860	
Plums, Greengages, Damsons	234,650	320,191	*Detailed figures not available at date of publication.*	485,151	522,670	*Detailed figures not available at date of publication.*
Pears	1,113,604	1,352,191		1,444,424	1,579,762	
Grapes	739,443	869,707		1,602,709	1,811,546	
Oranges	12,461,806	10,812,720		7,698,457	7,719,970	
Lemons, Limes, &c.	1,165,002	1,048,876		971,849	905,734	
Bananas	Bunches. 22,571,816	Bunches. 22,217,400		5,096,673	4,864,811	
Grape-Fruit	Cwt. 1,290,360	Cwt. 1,470,294		962,126	1,071,164	
Apricots	52,289	40,747		90,686	77,067	
Nuts used as Fruit	678,140	803,531		2,593,798	2,516,184	
Fruit (unenumerated)	1,071,077	1,040,958		1,195,814	1,210,265	
Onions *	4,800,351	4,578,462		1,471,949	1,956,164	
Potatoes	4,446,179	2,923,190		2,282,277	2,052,501	
Tomatoes	2,715,181	2,871,651		4,431,871	4,742,303	
Vegetables, unenumerated (fresh)	954,307	1,009,651		1,040,912	1,074,901	
Total value	..	..	..	36,485,544	38,423,004	35,425,809
OTHER ARTICLES:—						
Lard	Cwt. 1,471,143	Cwt. 1,442,805	Cwt.	£ 4,148,074	£ 3,137,796	£
Wool—sheep and lambs'	Thous. lb. 782,987	Thous. lb. 882,229		49,654,404	41,070,624	
Wood and timber—						
Pit-props or pit-wood	Piled Cubic Fathoms. 1,042,503	Piled Cubic Fathoms. 685,902		7,527,813	4,688,173	
Sawn, soft	Standards. 2,063,704	Standards. 1,478,771	*Detailed figures not available at date of publication.*	30,889,098	19,721,535	*Detailed figures not available at date of publication.*
Staves	Tons. 66,455	Tons. 44,353		742,283	541,346	
Feeding-stuffs for animals	1,811,487	1,904,106		11,347,741	11,422,654	
Seeds—						
Clover and grass	Cwt. 154,637	Cwt. 228,083		406,774	585,697	
Cotton	Tons. 672,197	Tons. 620,844		4,642,356	3,432,713	
Flax or linseed	285,984	276,391		3,860,743	3,585,594	
Rape	23,520	21,162		318,554	234,064	
Soya beans	98,796	98,688		847,270	766,209	
Superphosphates	23,814	14,421		53,192	34,675	
Phosphates of lime	445,887	410,805		738,259	666,621	
Nitrate-sodium	Cwt. 934,867	Cwt. 1,113,858		210,404	273,752	
Nitrate-potassium	78,088	50,570		56,793	41,407	
Cotton, raw of 100 lb.	Centals. 16,601,101	Centals. 12,072,240		46,829,368	28,879,829	
Hemp	Tons. 102,553	Tons. 87,107		3,097,816	2,021,597	
Flax	56,110	57,567		4,365,979	4,128,806	
Hides undressed—						
Dry	Cwt. 724,572	Cwt. 531,182		2,836,557	1,546,616	
Wet	1,151,450	834,585		4,053,884	2,580,146	
Petroleum (refined)	Thousand Gallons. 2,547,485	Thousand Gallons. 2,640,113		42,807,114	40,857,094	
Petroleum (crude)	527,267	567,909		4,991,407	5,179,155	

TABLE No. 18.—NUMBER AND VALUE OF LIVE CATTLE, SHEEP, PIGS, AND OTHER ANIMALS FOR FOOD imported into the United Kingdom in the undermentioned Years. [*From Trade and Navigation Returns.*]

	Number.			Value.		
	1937.	1938.	1939.	1937.	1938.	1939.
	No.	No.	No.	£	£	£
CATTLE, from—						
Eire	640,996	620,230	*Detailed figures not available at date of publication.*	6,114,699	7,872,615	*Detailed figures not available at date of publication.*
Canada	9,053	26,450		158,623	502,035	
Other countries	..	..		..	..	
Total	650,049	646,680		6,273,322	8,374,650	
SHEEP AND LAMBS, from—						
Eire	311,752	298,432		551,090	484,599	
SWINE, from—						
Eire	42,524	48,186		179,811	224,746	
ALL OTHER ANIMALS	903,135	949,211		117,835	136,873	
Total Value	..	..	..	7,122,058	9,220,868	10,993,699

TABLE No. 19.—NUMBER OF HORSES, CATTLE, SHEEP, AND PIGS imported into Great Britain from Ireland in each of the Years 1932-1939.

	1933.	1934.	1935.	1936.	1937.	1938.	1939.
HORSES :—							
Stallions	333	412	375	483	427	398	*Detailed figures not available at date of publication.*
Mares	3,905	4,942	4,886	4,310	4,012	3,543	
Geldings	5,033	6.830	6,744	6,190	5,412	4,312	
Total	9,271	12,184	12,005	10,933	9,851	8,253	
CATTLE : Oxen, Bulls, and Cows :—							
Fat	238,036	165,006	219,207	208,813	174,991	187,559	
Store	368,214	390,828	531,316	572,560	588,073	513,064	
Other cattle	44,732	62,664	71,437	70,710	71,348	78,465	
Calves	58,352	33,963	32,204	24,755	13,426	4,204	
Total	709,334	652,456	854,164	876,838	847,838	783,292	
SHEEP :—							
Sheep	169,937	165,257	194,996	256,834	171,806	210,372	
Lambs	282,964	328,859	275,071	371,062	289,332	270,485	
Total	452,901	494,116	470,067	627,896	461,138	480,857	
PIGS :—							
Fat	119,691	150,634	205,026	156,994	202,477	175,489	
Store	3,123	3,795	2,564	1,412	2,978	1,954	
Total	122,814	154,429	207,590	158,406	205,455	177,443	..

TABLE No. 20.—RETURN OF THE AVERAGE PRICES OF WOOL in the Years 1938 and 1939.

Years.	Australian.	South African.	English Fleeces.
	Per lb. s. d.	Per lb. s. d.	Per lb. s. d. to s. d.
1938	1 0½	0 9⅛	0 8¼ to 1 1¾
1939	0 11⅝	0 8⅛	0 9½* ,, 1 3¾

* Based on a comparatively small number of transactions.

EDINBURGH CORN MARKET.

STATEMENT SHOWING THE PRICES OF WHEAT, BARLEY, AND OATS FOR THE YEAR 1939.

The offering of grain by farmers and others in the area of the Market was not resumed during the year. It is hoped that advantage will be taken of the privilege afforded to farmers and merchants of offering grain in the open market, as undoubtedly it enables them to secure the market value, and gives a desirable indication of the true value of the various grains.

The Corn Sales Act of 1921 provides that all sales are to be effected by weight only, and expressed in terms of or by reference to the hundredweight of 112 lb. Experience has proved it to be convenient to quote at a price per 4½ cwt. for Wheat, 4 cwt. for Barley, and 3 cwt. for Oats.

The following statement gives a record of the year's proceedings in Edinburgh Corn Market.

1939.		WHEAT, per 4½ cwt.				BARLEY, per 4 cwt.				OATS, per 3 cwt.			
		Highest.		Lowest.		Highest.		Lowest.		Highest.		Lowest.	
		s.	d.	s.	d.	s.	d.	s.	d.	s.	d.	s.	d.
January	4	22	6	22	0	36	0	24	0	19	3	16	0
"	11	22	6	21	6	37	0	24	0	19	0	15	0
"	18	21	6	21	0	37	0	24	0	18	6	15	0
"	25	21	6	21	0	37	0	23	0	18	0	14	0
February	1	21	0	20	6	37	0	23	0	18	0	14	0
"	8	20	6	20	0	35	0	23	0	18	0	14	0
"	15	20	0	19	0	24	0	23	0	18	0	14	0
"	22	19	0	18	6	33	0	22	0	18	0	13	6
March	1	18	9	18	6	33	0	22	0	18	0	13	6
"	8	18	6	18	0	33	0	22	0	18	0	13	6
"	15	18	0	17	6	33	0	22	0	17	9	13	0
"	22	19	6	16	0	33	0	21	0	17	6	13	0
"	29	20	6	19	6	33	0	21	0	17	6	14	0
April	5	21	6	20	6	33	0	21	0	17	6	14	6
"	12	21	9	19	0	32	0	20	0	17	6	14	6
"	19	22	6	21	6	33	0	20	0	18	0	14	6
"	26	22	6	21	6	34	0	20	0	18	0	15	0
May	3	22	6	21	6	34	0	20	0	18	6	15	6
"	10	22	6	21	6	33	0	24	0	18	6	16	0
"	17	21	6	20	6	33	0	24	0	18	6	16	0
"	24	20	6	19	6	33	0	24	0	18	6	16	0
"	31	19	6	..		33	0	24	0	17	6	16	0
June	7	19	6	19	0	33	0	24	0	17	0	15	6
"	14	19	6	19	0	33	0	24	0	17	0	15	6
"	21	HIGHLAND AND AGRICULTURAL SOCIETY'S SHOW											
"	28	19	0	18	6	..		..		17	0	15	0
July	5	19	0	18	6	..		..		17	0	15	0
"	12	20	0	18	0	..		..		17	0	15	0
"	19	19	0	18	0	..		..		17	0	15	3
"	26	18	0	..		..		..		17	0	15	0
August	2	18	0	..		..		..		17	0	14	0
"	9	20	6	20	0	..		..		17	0	15	0
"	16	20	6	20	0	..		..		17	0	15	0
"	23	20	6	20	0	..		..		17	0	15	0
"	30	W A R											
September	6	..		..		..		..		..		..	
"	13	24	0	..		..		..		..		..	
"	20	24	0	..		40	0	32	0	24	0	23	0
"	27	24	0	..		42	0	32	0	25	0	28	0
October	4	..		..		44	0	34	0	26	0	23	0
"	11	24	0	..		45	0	35	0	27	0	24	0
"	18	24	0	..		45	0	40	0	26	6	24	0
"	25	31	6	..		50	0	38	0	27	6	24	0
November	1	31	6	..		52	0	48	0	27	6	24	6
"	8	..		..		58	0	50	0	27	6	25	0
"	15	..		..		66	0	50	0	29	0	26	0
"	22	31	6	..		70	0	60	0	32	0	28	0
"	29	31	6	.		65	0	60	0	34	0	32	0
December	6	31	6	..		65	0	60	0	38	0	34	0
"	13	31	6	..		70	0	60	0	45	0	42	0
"	20	31	6	..		70	0	65	0	44	0	43	0
"	27	31	6	..		78	0	55	0	43	0	41	0

PRICES OF SHEEP SINCE 1818.

TABLE No. 1.—CHEVIOT SHEEP.

Year.	Wethers.					Ewes.					Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1818	28	0	to	30	0	not quoted.					8	0	to	10	0
1819	25	0	"	27	0	15	0	to	17	0	10	6	"	12	0
1820	20	0	"	25	0	16	0	"	17	0	10	0	"	11	0
1821	18	0	"	20	0	14	0	"	16	0	7	6	"	8	0
1822	12	6	"	18	0	8	0	"	8	6	4	6	"	0	0
1823	13	6	"	18	0	7	0	"	10	6	5	6	"	6	0
1824	14	0	"	19	0	7	0	"	9	0	4	6	"	6	0
1825	29	0	"	32	0	15	0	"	19	0	9	0	"	10	6
1826	17	6	"	21	6	13	0	"	15	0	7	0	"	7	6
1827	15	0	"	24	0	not quoted.					7	0	"	8	0
1828	18	0	"	27	6	12	0	to	15	0	7	0	"	8	3
1829	18	0	"	24	0	12	6	"	14	0	7	0	"	8	6
1830	15	0	"	21	0	8	0	"	11	0	6	0	"	6	9
1831	18	0	"	25	0	9	0	"	13	0	7	0	"	8	0
1832	19	0	"	24	0	11	0	"	16	0	7	0	"	9	0
1833	22	0	"	31	0	13	6	"	20	0	8	0	"	11	3
1834	22	0	"	31	0	13	6	"	21	0	9	0	"	11	6
1835	22	0	"	27	6	18	0	"	20	6	8	0	"	11	0
1836	24	0	"	31	6	16	0	"	19	0	10	0	"	14	0
1837	19	0	"	28	0	14	0	"	19	0	10	0	"	13	0
1838	23	0	"	30	6	17	0	"	22	0	12	0	"	14	0
1839	23	0	"	31	0	14	0	"	19	0	0	0	"	13	0
1840	24	0	"	33	0	15	0	"	23	0	7	0	"	11	6
1841	23	0	"	30	0	14	0	"	22	0	8	0	"	12	0
1842	22	6	"	28	0	13	0	"	17	0	7	6	"	10	0
1843	19	0	"	25	0	8	0	"	12	0	5	0	"	8	0
1844	21	0	"	29	0	10	0	"	16	0	8	0	"	10	6
1845	23	0	"	33	0	13	0	"	20	0	8	0	"	13	0
1846	24	0	"	33	6	14	6	"	21	6	10	0	"	14	6
1847	24	0	"	35	0	13	0	"	24	0	11	6	"	15	0
1848	23	0	"	34	6	13	0	"	23	0	11	6	"	15	0
1849	21	0	"	30	2	12	0	"	21	0	0	0	"	14	0
1850	20	6	"	29	6	12	0	"	20	0	8	0	"	13	0
1851	21	6	"	31	0	13	0	"	21	0	8	9	"	14	0
1852	21	0	"	32	0	15	0	"	23	0	8	0	"	14	0
1853	26	6	"	33	0	17	0	"	23	6	9	0	"	17	0
1854	25	0	"	36	0	17	0	"	26	0	9	0	"	16	6
1855	28	6	"	36	0	16	0	"	25	0	10	0	"	17	0
1856	22	0	"	35	6	15	6	"	24	0	10	0	"	15	0
1857	24	0	"	36	0	14	6	"	26	0	10	6	"	14	6
1858	24	0	"	34	6	14	0	"	24	6	10	6	"	14	0
1859	25	0	"	34	6	16	0	"	25	0	10	3	"	14	9
1860	26	0	"	35	0	17	6	"	27	6	12	6	"	17	6
1861	25	0	"	38	6	16	0	"	28	0	9	0	"	16	0
1862	27	0	"	37	6	17	6	"	28	0	10	0	"	16	0
1863	25	0	"	38	6	19	0	"	28	6	10	6	"	16	0
1864	31	0	"	41	0	21	0	"	31	6	14	0	"	18	0
1865	32	6	"	44	0	22	6	"	33	6	14	6	"	20	0
1866	37	0	"	50	0	29	0	"	42	6	15	0	"	26	0
1867	26	0	"	58	0	18	0	"	25	6	12	0	"	16	0
1868	30	0	"	32	0	15	6	"	21	0	7	6	"	13	0
1869	28	0	"	33	0	15	0	"	22	6	7	6	"	14	0
1870	35	6	"	43	0	18	0	"	28	0	10	0	"	17	0
1871	36	6	"	49	0	22	0	"	33	6	14	0	"	20	0
1872	45	0	"	56	0	32	0	"	42	0	16	0	"	22	0
1873	42	0	"	51	0	25	0	"	42	0	15	6	"	22	0
1874	33	6	"	44	6	21	0	"	36	0	12	0	"	17	0

TABLE No. 1.—CHEVIOT SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1875	33	0	to	48	6	21	0	to	34	0	13	6	to	23	6
1876	40	0	„	52	6	23	0	„	30	0	13	6	„	25	0
1877	41	0	„	51	0	25	0	„	37	0	15	0	„	24	0
1878	35	6	„	48	0	23	6	„	35	0	14	0	„	22	0
1879	34	0	„	44	0	21	0	„	34	0	14	0	„	20	0
1880	30	0	„	48	6	20	0	„	30	0	12	6	„	20	0
1881	32	0	„	45	6	29	0	„	34	0	14	0	„	20	0
1882	40	0	„	51	0	30	0	„	40	0	14	0	„	20	6
1883	44	0	„	55	6	34	6	„	46	6	15	6	„	23	0
1884	36	0	„	47	6	29	6	„	41	6	12	6	„	20	0
1885	30	0	„	38	0	24	0	„	31	0	12	0	„	18	0
1886	32	0	„	40	0	21	0	„	29	0	12	6	„	19	0
1887	29	0	„	36	0	18	0	„	26	0	11	0	„	16	6
1888	30	0	„	38	0	19	0	„	27	0	12	0	„	17	6
1889	36	0	„	44	0	24	0	„	32	0	14	0	„	22	0
1890	31	0	„	40	0	22	0	„	30	0	12	6	„	20	0
1891	27	0	„	33	0	16	0	„	25	0	9	0	„	16	0
1892	22	0	„	30	6	18	0	„	22	0	5	0	„	11	0
1893	26	0	„	35	6	18	0	„	28	6	8	6	„	15	0
1894	26	0	„	37	0	20	0	„	31	0	10	6	„	18	6
1895	28	0	„	39	0	22	0	„	34	0	11	6	„	19	6
1896	24	6	„	34	0	19	0	„	30	6	9	0	„	16	6
1897	27	0	„	36	0	21	0	„	31	6	11	0	„	17	6
1898	27	0	„	37	0	22	0	„	32	6	12	0	„	18	6
1899	24	0	„	33	0	20	0	„	30	6	10	6	„	16	0
1900	26	0	„	36	0	22	0	„	32	6	12	0	„	17	0
1901	25	0	„	32	6	20	0	„	29	6	11	0	„	16	0
1902	24	0	„	31	6	18	0	„	27	0	9	6	„	14	6
1903	26	0	„	34	0	21	0	„	31	0	11	4	„	18	0
1904	28	6	„	36	6	23	0	„	32	6	13	0	„	20	0
1905	27	6	„	35	0	23	0	„	33	0	14	0	„	21	0
1906	30	0	„	38	0	26	0	„	34	6	15	0	„	23	0
1907	28	0	„	34	0	22	0	„	30	6	13	6	„	19	6
1908	26	0	„	32	6	21	0	„	27	6	11	6	„	17	0
1909	24	0	„	31	0	18	0	„	25	6	9	6	„	16	0
1910	27	0	„	35	0	22	0	„	31	0	12	0	„	20	0
1911	24	0	„	31	6	18	6	„	27	6	10	6	„	18	0
1912	26	0	„	34	6	22	0	„	31	0	13	0	„	21	0
1913	30	0	„	39	0	24	0	„	35	6	16	0	„	24	0
1914	32	6	„	41	0	28	0	„	39	0	18	0	„	27	6
1915	36	0	„	46	0	31	0	„	44	0	20	0	„	30	6
1916	40	6	„	51	0	34	0	„	49	0	22	0	„	34	6
1917	43	6	„	56	0	38	0	„	56	0	24	0	„	34	0
1918	50	0	„	66	0	42	0	„	61	0	25	0	„	37	0
1919	53	0	„	69	0	44	6	„	67	0	28	0	„	40	6
1920	56	0	„	91	0	48	0	„	79	0	34	0	„	49	0
1921	45	0	„	60	0	52	3	„	85	9	33	9	„	52	3
1922	40	0	„	56	0	56	0	„	90	6	27	0	„	50	0
1923	44	0	„	65	0	61	0	„	106	0	30	0	„	62	0

Year	Wethers.					Ewes.					Lambs.									
											Wethers.					Ewes.				
	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.	s.	d.		s.	d.
1924	41	0	to	61	0	60	0	to	100	0	31	6	to	58	0	40	0	to	85	6
1925	39	3	„	50	0	56	0	„	88	9	22	3	„	50	0	36	0	„	82	0
1926	35	0	„	49	3	34	6	„	64	6	26	3	„	42	0	28	6	„	66	6
1927	28	9	„	46	3	32	6	„	55	6	23	3	„	39	0	25	3	„	52	0
1928	28	3	„	48	6	30	6	„	55	6	22	9	„	47	0	23	0	„	45	0
1929	33	6	„	54	6	34	6	„	62	0	25	6	„	47	0	30	6	„	51	9
1930	36	0	„	54	0	35	0	„	74	6	24	0	„	47	3	30	0	„	59	0
1931	24	0	„	45	6	23	0	„	50	6	17	0	„	37	0	21	0	„	57	6
1932	16	0	„	26	6	18	0	„	36	6	10	6	„	24	6	12	0	„	33	0
1933	16	0	„	28	0	25	3	„	40	0	16	6	„	31	6	19	6	„	33	0
1934	16	0	„	34	3	22	6	„	44	6	19	3	„	33	3	18	6	„	43	0
1935	22	0	„	37	3	24	0	„	44	3	16	0	„	33	3	17	0	„	40	6
1936	24	6	„	50	0	28	0	„	55	0	18	6	„	37	6	23	0	„	49	6
1937	24	6	„	49	6	29	0	„	75	6	19	0	„	45	3	27	0	„	68	0
1938	17	0	„	39	6	20	0	„	64	0	10	9	„	31	6	16	0	„	44	3
1939	19	6	„	42	9	18	6	„	43	3	11	6	„	30	9	17	0	„	48	6

TABLE NO. 2.—BLACKFACE SHEEP.

Year.	Wethers.	Ewes.	Lambs.
	s. d. s. d.	s. d. s. d.	s. d. s. d.
1819	22 0 to 24 0	12 0 to 15 0	8 0 to 9 0
1820	20 0 „ 23 3	15 6 „ 17 0	7 0 „ 8 6
1821	18 0 „ 20 0	12 0 „ 13 0	6 0 „ 7 0
1822	11 6 „ 18 6	5 6 „ 6 0	4 6 „ 0 0
1823	12 0 „ 16 0	5 0 „ 6 6	4 0 „ 5 3
1824	9 6 „ 13 6	6 0 „ 7 0	4 0 „ 5 0
1825	22 0 „ 26 0	11 0 „ 13 6	6 0 „ 9 0
1826	15 0 „ 17 0	8 6 „ 9 0	4 6 „ 6 0
1827	14 0 „ 18 6	7 0 „ 10 0	6 0 „ 7 6
1828	15 0 „ 20 0	8 0 „ 11 0	5 0 „ 7 6
1829	14 0 „ 18 0	9 0 „ 10 0	6 0 „ 7 0
1830	9 6 „ 13 0	4 0 „ 6 0	4 6 „ 6 0
1831	13 0 „ 17 0	5 0 „ 7 6	5 0 „ 6 6
1832	14 0 „ 18 0	7 0 „ 11 6	6 0 „ 7 3
1833	16 0 „ 24 0	7 6 „ 12 0	6 6 „ 9 0
1834	16 0 „ 22 0	10 0 „ 13 0	6 0 „ 8 6
1835	15 0 „ 18 9	10 0 „ 13 0	7 0 „ 8 0
1836	15 0 „ 21 0	9 0 „ 12 0	8 6 „ 11 0
1837	13 0 „ 16 0	8 0 „ 12 0	8 0 „ 9 6
1838	15 0 „ 20 6	10 0 „ 13 0	not quoted.
1839	15 0 „ 22 0	10 0 „ 12 0	7 0 to 8 3
1840	15 0 „ 22 6	11 0 „ 12 0	7 0 „ 9 3
1841	16 0 „ 20 0	9 0 „ 11 0	6 0 „ 8 0
1842	14 0 „ 19 0	7 6 „ 8 0	5 6 „ 7 0
1843	not quoted.	4 9 „ 6 6	not quoted.
1844	15 0 to 21 0	6 6 „ 10 0	5 0 to 8 0
1845	14 0 „ 23 0	8 0 „ 12 0	6 0 „ 8 0
1846	13 0 „ 24 0	10 0 „ 13 0	8 0 „ 9 0
1847	20 6 „ 25 0	10 0 „ 14 0	8 6 „ 9 6
1848	20 0 „ 24 0	11 3 „ 12 0	8 6 „ 10 0
1849	not quoted.	not quoted.	7 0 „ 7 6
1850	..	..	7 0 „ 0 0
1851	17 6 to 23 0	9 0 to 12 0	6 6 „ 8 0
1852	18 6 „ 22 0	9 6 „ 12 0	4 6 „ 7 9
1853	23 0 „ 27 0	14 6 „ 16 6	8 0 „ 11 6
1854	20 0 „ 26 0	11 0 „ 16 6	8 0 „ 10 6
1855	23 6 „ 26 6	14 0 „ 16 0	10 0 „ 11 0
1856	17 0 „ 24 0	10 0 „ 20 0	7 6 „ 10 0
1857	20 0 „ 29 0	10 6 „ 15 0	9 3 „ 11 0
1858	20 0 „ 27 6	9 9 „ 18 9	8 3 „ 10 6
1859	20 0 „ 25 0	10 0 „ 14 0	8 9 „ 11 0
1860	21 0 „ 27 3	11 0 „ 16 0	10 0 „ 13 6
1861	21 0 „ 29 0	12 0 „ 22 0	6 3 „ 14 0
1862	16 9 „ 27 0	12 0 „ 18 3	6 0 „ 12 0
1863	20 0 „ 30 6	13 0 „ 16 0	8 0 „ 11 6
1864	25 0 „ 30 0	15 0 „ 19 0	10 0 „ 13 6
1865	15 6 „ 32 6	15 0 „ 25 0	10 0 „ 17 0
1866	31 6 „ 40 0	20 0 „ 36 0	13 6 „ 22 6
1867	20 0 „ 30 6	14 0 „ 22 0	7 6 „ 18 6
1868	20 0 „ 26 0	10 6 „ 13 6	7 0 „ 13 0
1869	22 0 „ 28 0	11 0 „ 14 0	6 9 „ 9 0
1870	27 0 „ 32 6	18 0 „ 22 0	8 0 „ 14 6
1871	23 0 „ 37 0	13 0 „ 28 0	11 0 „ 16 3
1872	31 6 „ 45 0	18 0 „ 32 0	12 6 „ 18 0
1873	28 0 „ 39 0	16 6 „ 27 0	7 0 „ 16 0
1874	25 0 „ 35 0	18 0 „ 20 0	7 0 „ 14 0
1875	26 6 „ 37 6	15 0 „ 21 3	9 6 „ 17 6
1876	30 0 „ 40 0	19 0 „ 24 0	13 0 „ 20 6
1877	35 0 „ 38 9	18 0 „ 25 0	13 6 „ 23 0
1878	30 0 „ 36 0	17 0 „ 28 0	12 0 „ 22 0
1879	25 0 „ 35 9	16 0 „ 24 0	10 6 „ 20 0
1880	25 0 „ 38 0	16 6 „ 22 6	10 0 „ 17 0
1881	30 0 „ 39 0	15 0 „ 23 0	10 0 „ 15 0
1882	33 0 „ 46 0	20 0 „ 28 0	12 6 „ 18 6
1883	36 0 „ 56 6	24 6 „ 33 0	14 0 „ 21 6
1884	29 0 „ 43 6	19 6 „ 28 0	12 0 „ 19 6
1885	24 0 „ 34 0	18 0 „ 22 6	10 0 „ 15 0
1886	25 0 „ 34 0	12 0 „ 22 0	10 6 „ 16 0
1887	22 0 „ 30 0	11 0 „ 19 0	8 0 „ 13 0
1888	22 0 „ 32 0	13 0 „ 24 0	10 0 „ 15 0
1889	26 0 „ 40 0	18 0 „ 29 0	13 0 „ 22 0

TABLE NO. 2.—BLACKFACE SHEEP—*Continued.*

Year.	Wethers.					Ewes.					Lambs				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1890	24	0	to	37	0	14	0	to	27	0	10	6	to	19	0
1891	21	0	"	37	0	10	0	"	24	0	7	6	"	15	0
1892	16	0	"	28	6	6	0	"	17	0	8	0	"	10	0
1893	21	0	"	37	0	12	0	"	24	0	7	0	"	14	0
1894	20	0	"	37	0	14	6	"	26	6	8	6	"	16	6
1895	23	0	"	41	0	16	0	"	28	6	9	0	"	17	0
1896	19	0	"	35	4	18	0	"	24	0	6	0	"	13	6
1897	21	0	"	36	6	15	0	"	25	6	7	0	"	14	6
1898	22	0	"	37	0	16	0	"	26	6	8	0	"	15	0
1899	20	0	"	33	6	13	0	"	24	0	5	6	"	13	0
1900	23	0	"	36	0	16	0	"	26	6	8	0	"	15	6
1901	20	0	"	35	0	14	0	"	25	6	6	6	"	14	6
1902	18	6	"	34	0	12	0	"	24	0	6	0	"	14	0
1903	21	0	"	36	0	15	0	"	28	0	7	0	"	16	6
1904	23	0	"	38	6	18	0	"	30	0	8	6	"	17	6
1905	21	6	"	37	0	19	0	"	31	0	9	0	"	18	6
1906	23	0	"	38	0	20	0	"	33	0	10	0	"	19	6
1907	21	0	"	33	6	17	0	"	28	0	8	6	"	17	6
1908	19	6	"	30	0	15	0	"	24	6	8	0	"	16	0
1909	17	0	"	28	0	11	6	"	22	0	6	3	"	13	0
1910	21	0	"	32	6	16	0	"	27	6	8	0	"	17	0
1911	19	0	"	29	6	14	0	"	24	0	7	0	"	15	0
1912	21	6	"	32	6	17	0	"	27	6	9	6	"	17	6
1913	24	6	"	36	0	21	0	"	31	0	12	6	"	21	6
1914	27	0	"	38	6	25	0	"	34	6	15	6	"	24	0
1915	31	0	"	42	6	29	0	"	39	6	17	0	"	25	6
1916	33	0	"	46	6	31	0	"	42	0	19	0	"	27	6
1917	36	0	"	51	0	33	0	"	47	0	21	0	"	30	0
1918	41	0	"	56	0	36	0	"	50	0	27	0	"	38	0
1919	44	0	"	62	0	39	0	"	54	0	29	0	"	36	0
1920	46	0	"	86	0	44	0	"	62	0	31	0	"	48	0
1921	32	9	"	60	9	35	3	"	62	6	20	3	"	47	0
1922	40	3	"	63	0	40	6	"	74	0	18	0	"	44	0
1923	46	0	"	65	6	43	0	"	78	0	21	0	"	45	6
1924	46	0	"	68	6	45	6	"	85	0	25	0	"	55	6
1925	36	0	"	60	0	40	0	"	78	0	17	6	"	44	0

Year.	Wethers.					Ewes.					Lambs									
											Wether.					Ewe.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s*	*d.*		*s*	*d*
1926	30	0	to	54	0	31	0	to	70	0	21	9	to	49	0	19	0	to	50	0
1927	26	6	"	48	0	26	0	"	64	0	17	9	"	40	0	17	6	"	37	9
1928	29	0	"	45	9	24	0	"	57	0	16	6	"	38	6	17	0	"	38	9
1929	29	9	"	46	0	29	0	"	64	0	20	9	"	43	0	18	0	"	37	6
1930	31	6	"	45	0	28	6	"	60	0	20	0	"	45	9	20	0	"	37	6
1931	19	6	"	29	9	15	0	"	38	0	14	3	"	36	9	16	6	"	40	6
1932	12	0	"	10	6	15	0	"	29	0	7	3	"	13	6	7	0	"	14	6
1933			..			20	0	"	34	0	12	9	"	19	3	11	0	"	18	3
1934			..			22	6	"	44	0	16	0	"	25	3	16	6	"	21	3
1935			..			26	0	"	40	0	16	0	"	28	9	10	0	"	23	0
1936			..			27	6	"	48	0	18	6	"	37	6	6	0	"	[illegible]	0
1937			..			32	0	"	54	0	22	6	"	39	3	21	6	"	34	0
1938			..			22	0	"	50	0	12	6	"	28	0	10	6	"	25	0
1939			..			17	6	"	40	0	12	6	"	24	6	12	0	"	24	0

TABLE No. 8.—PRICE OF WOOL, PER STONE OF 24 LB., SINCE 1818.

Year.	Laid Cheviot.	White Cheviot.	Laid Highland.	White Highland.
	s. d. s. d.	s. d. s. d.	s. d. s. d.	s. d. s. d.
1818	40 0 to 42 2	..	20 0 to 22 6	..
1819	21 0 „ 22 0	..	10 0 „ 10 3	..
1820	20 0 „ 22 0	..	9 0 „ 10 0	..
1821	18 0 „ 20 0	..	9 0 „ 10 0	..
1822	12 6 „ 14 6	..	5 0 „ 6 6	..
1823	9 0 „ 10 6	..	5 0 „ 5 9	..
1824	13 6 „ 15 0	..	6 0 „ 6 3	..
1825	10 6 „ 22 0	..	10 0 „ 10 6	..
1826	11 0 „ 14 0	..	5 0 „ 5 6	..
1827	11 0 „ 14 0	..	5 6 „ 6 9	..
1828	8 0 „ 11 0	..	5 6 „ 6 0	..
1829	8 6 „ 11 0	..	4 3 „ 0 0	..
1830	9 6 „ 11 0	..	4 6 „ 5 0	..
1831	17 0 „ 20 0	..	7 6 „ 8 6	..
1832	14 0 „ 16 0	..	7 0 „ 7 6	..
1833	18 0 „ 20 7	..	10 0 „ 11 0	..
1834	21 0 „ 24 6	..	5 6 „ 7 0	..
1835	19 0 „ 20 6	..	9 6 „ 10 8	..
1836	21 0 „ 25 0	..	10 0 „ 14 0	..
1837	12 0 „ 14 0	..	7 0 „ 7 8	..
1838	19 0 „ 22 6	..	6 0 „ 10 0	..
1839	18 0 „ 20 0	..	8 0 „ 12 0	..
1840	15 0 „ 0 0	..	7 0 „ 0 0	..
1841	15 0 „ 16 9	..	6 0 „ 7 5	..
1842	12 6 „ 14 0	..	not quoted.	..
1843	9 0 „ 11 6	..	5 0 to 6 0	..
1844	15 0 „ 18 0	..	not quoted.	..
1845	14 6 „ 17 6	..	7 6 to 8 6	..
1846	12 0 „ 14 6	..	8 0 „ 8 6	..
1847	12 6 „ 14 0	..	not quoted.	..
1848	9 6 „ 11 0	..	4 9 to 0 0	..
1849	12 0 „ 16 6	..	6 0 „ 6 3	..
1850	15 0 „ 17 6	..	8 0 „ 8 6	..
1851	12 0 „ 16 0	..	8 0 „ 9 3	..
1852	13 0 „ 15 0	..	8 0 „ 9 0	..
1853	19 0 „ 22 0	..	11 0 „ 12 6	..
1854	12 0 „ 15 0	..	7 6 „ 8 6	..
1855	14 6 „ 19 0	..	8 6 „ 9 0	..
1856	19 0 „ 21 6	..	11 0 „ 0 0	..
1857	19 0 „ 24 0	..	13 0 „ 14 3	..
1858	15 0 „ 17 0	..	8 9 „ 10 0	..
1859	18 6 „ 24 0	..	10 9 „ 11 6	..
1860	22 0 „ 32 0	37 0 to 38 0	10 0 „ 11 3	..
1861	19 6 „ 27 0	from 30s. upwards	not quoted.	..
1862	18 6 „ 26 0	30 0 to 37 0	11 6 to 16 0	..
1863	25 6 „ 31 0	38 0 „ 42 0	15 3 „ 17 6	..
1864	31 0 „ 39 0	47 0 „ 54 0	17 6 „ 20 0	..
1865	23 0 „ 30 0	44 0 „ 45 0	15 0 „ 17 0	..
1866	24 0 „ 30 0	30 0 „ 38 0	14 0 „ 16 0	..
1867	16 0 „ 21 6	not quoted.	not quoted.	..
1868	19 0 „ 26 0	28 0 to 32 0	8 6 to 9 0	..
1869	18 0 „ 26 6	not quoted.	8 6 „ 10 0	..
1870	15 0 „ 23 6	25 0 to 26 0	9 6 „ 0 0	..
1871	20 0 „ 26 6	30 0 „ 34 6	12 0 „ 15 0	..
1872	26 0 „ 37 6	40 0 „ 48 0	18 0 „ 21 0	..
1873	17 0 „ 18 0	34 0 „ 40 0	9 0 „ 12 0	..
1874	18 6 „ 26 6	30 0 „ 34 0	9 6 „ 13 0	..
1875	25 0 „ 32 0	34 6 „ 36 0	12 6 „ 16 0	..
1876	20 0 „ 24 0	30 0 „ 34 6	9 6 „ 12 0	..
1877	20 9 „ 26 0	28 0 „ 30 0	10 0 „ 12 0	..
1878	18 9 „ 25 0	27 0 „ 32 0	8 6 „ 11 6	..
1879	15 0 „ 17 0	prices very low.	7 0 „ 0 0	..
1880	20 0 „ 24 0	30 0 to 32 0	10 6 „ 11 6	14 0 to 15 0
1881	17 0 „ 21 0	27 0 „ 30 0	5 0 „ 9 6	12 0 „ 13 0
1882	14 0 „ 18 0	27 6 „ 28 0	7 6 „ 9 0	13 0 „ 14 0
1883	13 0 „ 18 0	26 0 „ 28 0	6 6 „ 8 6	11 6 „ 12 6
1884	13 0 „ 18 0	26 0 „ 28 0	6 6 „ 8 6	11 6 „ 12 6
1885	12 0 „ 17 0	22 6 „ 26 0	6 0 „ 8 0	11 6 „ 12 0
1886	13 0 „ 18 0	23 0 „ 27 6	6 6 „ 8 6	11 6 „ 12 0
1887	14 0 „ 22 0	23 0 „ 28 0	7 0 „ 9 0	11 6 „ 13 0
1888	13 0 „ 20 0	23 0 „ 28 0	7 0 „ 9 0	11 0 „ 12 6

TABLE No. 3.—PRICE OF WOOL—*Continued.*

Year.	Laid Cheviot.					White Cheviot.					Laid Highland.					White Highland.				
	s.	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*	*s.*	*d.*		*s.*	*d.*
1889	13	0	to	18	0	24	0	to	28	0	7	0	to	9	0	11	0	to	12	6
1890	13	0	"	18	0	24	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1891	12	6	"	18	0	22	0	"	28	0	7	0	"	9	0	11	0	"	12	6
1892	12	0	"	18	0	20	0	"	28	0	7	0	"	8	6	10	6	"	12	0
1893	12	0	"	17	0	20	0	"	27	0	7	0	"	8	0	10	0	"	12	0
1894	12	0	"	16	0	20	0	"	26	0	7	0	"	8	0	10	0	"	12	0
1895	12	0	"	16	0	20	0	"	25	0	7	0	"	8	0	10	0	"	11	6
1896	11	0	"	15	0	19	0	"	24	0	7	0	"	8	0	10	0	"	11	6
1897	11	0	"	14	0	18	0	"	23	0	7	0	"	8	0	10	6	"	12	0
1898	10	0	"	13	0	16	0	"	20	0	7	0	"	8	0	10	0	"	11	6
1899	10	0	"	13	0	13	0	"	18	6	7	0	"	8	0	8	6	"	9	6
1900	9	9	"	12	0	13	0	"	18	6	6	9	"	7	9	8	0	"	9	6
1901	9	0	"	10	0	11	0	"	16	6	5	9	"	6	6	8	0	"	9	0
1902	9	0	"	10	0	11	6	"	17	0	6	0	"	6	6	8	6	"	9	6
1903	10	0	"	12	0	15	0	"	18	0	7	0	"	8	0	11	6	"	12	6
1904	15	0	"	17	0	20	0	"	21	0	9	0	"	10	0	14	0	"	15	0
1905	17	0	"	20	0	24	0	"	26	0	10	0	"	11	0	15	0	"	16	0
1906	18	0	"	21	0	27	0	"	28	6	11	6	"	13	0	16	6	"	17	6
1907			*			22	0	"	24	0	11	0	"	12	6	16	0	"	17	0
1908			*			16	0	"	18	0			†			8	0	"	8	6
1909			*			24	0	"	26	0			†			12	6	"	14	0
1910			*			25	0	"	30	0			†			13	0	"	14	6
1911			*			25	0	"	30	0			†			13	0	"	14	6
1912			*			24	0	"	29	0			†			14	0	"	15	0
1913			*			25	0	"	30	0			†			17	0	"	18	0
1914			*			24	0	"	29	0			†			15	0	"	15	6
1915‡			*			42	0	"	48	0			†			21	0	"	22	0

* No Cheviots smeared now. † No Highlands smeared now. ‡ These are July prices

PRICE OF WOOL PER STONE OF 24 LB.—*Continued.*

	CHEVIOT.				HALF-BRED.				BLACK-FACE.		CROSS-BRED (BLACKFACE EWE AND LEICESTER RAM).			
	HOGG.		EWE AND WETHER.		HOGG.		EWE AND WETHER.		HOGG.	EWE AND WETHER.	HOGG.		EWE AND WETHER.	
	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.	Washed.	Un-washed.			Washed.	Un-washed.	Washed.	Un-washed.
	s. d.	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*	*s. d.*
[1] 1916 . . .	36 6	30 0	33 0	27 6	34 6	28 6	33 0	27 6	23 0	23 0	28 6	25 6	28 6	25 6
CAITHNESS & SUTHERLAND	40 0	32 6	34 0	29 0	35 0	29 0	34 0	28 6						
[1] 1917 . . .	40 6	33 0	37 0	31 0	38 6	31 6	37 0	31 0	25 6	25 6	31 6	28 6	31 6	28 6
CAITHNESS & SUTHERLAND	44 6	36 0	37 6	32 6	39 0	32 6	37 6	31 6						
[1] 1918 . . .	43 6	35 6	39 6	33 0	41 0	33 6	39 6	33 0	27 0	27 0	33 6	30 6	33 6	30 6
CAITHNESS & SUTHERLAND	47 6	38 6	40 0	34 6	41 6	34 6	40 0	33 6						
1919 . . .	84 0	70 0	82 0	66 0	82 0	62 0	70 0	58 0	34 0	34 0	46 0	39 0	44 0	38 0
CAITHNESS & SUTHERLAND	88 0	74 0	84 0	68 0	84 0	63 0	72 0	60 0						
1920 . . .	86 0	70 0	83 0	66 0	74 0	54 0	65 0	50 0	24 0	24 0	35 0	29 0	34 0	27 0
CAITHNESS & SUTHERLAND	90 0	74 0	87 0	68 0	76 0	56 0	68 0	52 0						
1921 . . .	22 0	17 0	19 0	15 0	18 6	14 6	16 0	13 0	9 6	9 6	12 0	10 0	12 0	10 0
CAITHNESS & SUTHERLAND	23 0	18 0	20 0	16 0	19 6	15 6	17 0	14 0						
1922 . . .	30 0	25 0	26 0	22 0	26 0	20 0	22 0	18 0	16 0	16 0	16 6	15 0	16 6	15 0
CAITHNESS & SUTHERLAND	31 6	26 0	27 0	23 0	27 0	21 0	23 0	19 0						
1923 . . .	41 0	34 0	36 0	30 0	33 0	27 0	30 0	25 0	17 6	17 6	20 0	18 0	20 0	18 0
CAITHNESS & SUTHERLAND	43 0	35 0	37 0	31 0	34 0	28 0	31 0	26 0						
1924 . . .	58 0	49 0	53 0	45 0	49 0	40 0	45 0	39 0	25 6	25 6	34 6	30 6	33 0	30 0
CAITHNESS & SUTHERLAND	60 0	50 0	54 0	46 0	50 0	41 0	46 0	40 0						
1925 . . .	39 0	34 0	36 0	30 0	33 6	28 6	32 0	27 0	25 6	25 6	26 0	23 6	25 6	23 0
CAITHNESS & SUTHERLAND	40 0	35 0	37 0	31 0	34 0	29 0	33 0	28 0						
1926 . . .	35 0	29 0	32 0	28 0	32 0	26 6	28 0	24 6	19 0	19 0	22 6	20 0	22 0	19 6
CAITHNESS & SUTHERLAND	36 0	30 0	33 0	29 0	33 0	27 6	29 0	25 6						
1927 . . .	38 0	31 0	35 0	31 0	34 6	29 6	32 0	27 6	24 0	24 0	27 0	25 6	27 0	25 0
CAITHNESS & SUTHERLAND	39 0	32 0	36 0	32 0	35 0	30 0	33 0	28 6						
1928 . . .	51 0	43 0	48 0	41 0	47 0	40 0	43 0	37 0	24 6	24 6	33 0	31 0	32 0	30 0
CAITHNESS & SUTHERLAND	52 0	44 0	49 0	42 0	48 0	41 0	44 0	38 0						
1929 . . .	37 0	32 0	34 0	29 0	34 0	29 0	32 0	27 0	24 0	24 0	27 0	25 0	26 0	24 0
1930 . . .	23 0	19 0	22 0	18 0	21 0	17 6	20 0	16 6	12 0	12 0	17 6	15 6	16 6	15 6
1931 . . .	16 6	13 6	15 6	13 0	15 0	13 0	13 6	11 6	11 0	11 0	12 0	10 6	11 6	10 0
1932 . . .	14 6	11 6	14 0	11 6	12 6	11 6	11 6	9 6	8 0	8 0	9 0	8 6	8 0	7 6
1933 . . .	20 0	17 0	19 0	16 0	18 0	16 0	17 0	14 0	11 6	11 6	12 0	11 0	11 6	11 0
1934 . . .	21 6	17 6	21 0	17 6	19 0	17 0	17 0	14 0	10 0	10 0	12 0	11 0	12 0	11 0
1935 . . .	26 0	21 0	24 6	19 6	21 6	19 0	19 0	17 0	10 6	10 6	14 0	12 6	14 0	12 6
1936 . . .	27 0	22 0	25 6	20 0	21 6	19 0	19 0	17 0	14 0	14 0	17 0	16 0	17 0	16 0
1937 . . .	39 0	35 0	38 0	33 6	34 6	32 0	34 6	31 6	26 0	26 0	32 0	29 0	32 0	29 0
1938 . . .	22 0	19 6	21 6	18 6	21 0	18 6	20 0	18 6	12 0	12 0	16 0	14 6	16 0	14 6
1939 . . .	26 0	22 0	25 6	21 6	24 0	21 6	23 6	21 6	15 0	15 0	21 0	19 0	21 0	19 0

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[1] The prices given were prices fixed by Government, and not free market prices.

GENERAL SHOW AT EDINBURGH, 1939.

THE Society's One hundred and eighth Show was held at Edinburgh on Tuesday, 20th June, and three following days. This was the eighteenth General Show to be held at Edinburgh.

The Show was held at Saughton Mains, on a site granted by the Corporation of Edinburgh. The area covered by the Showyard proper extended to about 51 acres, while other areas extending to 30 acres, at convenient points around the Showground, were used for the parking of cars. In addition to the site, the Corporation of Edinburgh gave a free supply of water and the services of the Cleansing Department in the disposal of refuse. Gas and electricity services, on advantageous terms, were also made available for the convenience of Standholders. The Lord Provost, Town Council, and the various Department officials did their utmost to further the success of the Show.

An excellent entry was obtained in practically all sections of live stock. Cattle and Sheep entries showed a large increase over the preceding year at Dumfries, while Horses, Pigs, and other sections secured a satisfactory entry. The entries of Implements, Machinery, and Trade Exhibits touched a new record level, the frontage applied for amounting to no less than 11,200 feet.

The Flower Show was on a larger scale than formerly, and was again one of the most attractive and popular sections of the Show.

An outstanding feature of the Show was a Musical Ride, in full dress, by a detachment of H.M. Life Guards, given on the Wednesday, Thursday, and Friday. The music for the Ride was provided by the Life Guards' Band, which also rendered programmes of music from the Band Stand in the Main Square. The Musical Ride aroused keen interest, and was highly appreciated by the many visitors to the Show.

In addition, there were the usual Jumping Competitions, which attracted a good entry, Sheep Dog Demonstrations, and Physical Fitness Displays, the latter kindly arranged by the National Fitness Council for Scotland.

Some rain fell on the Tuesday forenoon, the opening day, and judging was carried through under somewhat unpleasant conditions. The weather, however, cleared up and was excellent for the remainder of the Show.

The total number of visitors who paid for admission during the four days was 97,272, being the highest number recorded at any Show of the Society, the previous highest figure being 96,340 in 1933 at Dundee.

The Directors are gratified to report that the Accounts show a credit balance of £4918, which is slightly in excess of the profit of £4813 at the Dundee Show in 1933.

STATISTICS.

The following tables give the number of entries in the various sections:—

CATTLE.

SHORTHORN.

	No. of Entries.	
1. Aged bulls	6	
Extra Stock	1	
2. Two-year-old bulls	5	
3. One-year-old bulls	8	
4. One-year-old bulls	8	
5. Cows in milk, born before 1st December 1935	6	
6. Three-year-old cows	1	
7. Two-year-old cows or heifers	5	
8. One-year-old heifers	9	
9. One-year-old heifers	8	
	—	57

ABERDEEN-ANGUS.

10. Aged bulls	10	
Extra Stock	1	
11. Two-year-old bulls	8	
12. One-year-old bulls	11	
13. One-year-old bulls	18	
14. Cows in milk, born before 1st December 1935	7	
Extra Stock	1	
15. Three-year-old cows in milk	10	
16. Two-year-old cows or heifers	14	
17. One-year-old heifers	12	
18. One-year-old heifers	13	
	—	105

GALLOWAY.

19. Aged bulls	3	
20. Two-year-old bulls	3	
21. One-year-old bulls	6	
22. Cows in milk, born before 1st December 1936	7	
23. Two-year-old cows or heifers	10	
24. One-year-old heifers	10	
25. One-year-old heifers	6	
	—	45

BELTED GALLOWAY.

26.	Bulls born before 1st December 1937	5	
	Extra Stock	1	
27.	Bulls born on or after 1st December 1937	5	
28.	Cows or heifers, born before 1st December 1936, in milk or in calf	2	
	Extra Stock	1	
29.	Heifers born on or after 1st December 1936 and before 1st December 1937	8	
30.	Heifers born on or after 1st December 1937	6	
		—	28

HIGHLAND.

31.	Aged bulls	2	
32.	Two-year-old bulls	2	
33.	One-year-old bulls	5	
34.	Cows of any age, with calf at foot	7	
	Extra Stock	1	
35.	Three-year-old heifers	4	
36.	Two-year-old heifers	9	
37.	One-year-old heifers	8	
		—	38

AYRSHIRE.

38.	Cows in milk, born before 1936	12	
39.	Cows in milk, born on or after 1st January 1936	12	
40.	Cows of any age, in calf	8	
41.	Heifers born on or after 1st June 1936, in calf	19	
42.	Heifers born in 1937	12	
43.	Heifers born in 1938	12	
44.	Bulls born before 1937	8	
45.	Bulls born in 1937	4	
46.	Bulls born in 1938	7	
		—	94

BRITISH FRIESIAN.

47.	Cows in milk, born in or before 1935	10	
48.	Cows in calf and not in milk, born in or before 1936	11	
49.	Cows in milk, born in 1936 or 1937	10	
50.	Heifers born in 1937	14	
51.	Heifers born in 1938, before 1st July	10	
52.	Heifers born in 1938, on or after 1st July	9	
53.	Bulls born in or before 1936	3	
	Extra Stock	1	
54.	Bulls born in 1937	6	
55.	Bulls born in 1938	13	
		—	87
			454

HORSES.

CLYDESDALE STALLIONS AND COLTS.

56.	Aged stallions	5	
57.	Three-year-old entire colts	10	
58.	Two-year-old entire colts	14	
59.	One-year-old entire colts	17	
		—	46

Clydesdale Geldings.

60. Aged geldings	6	
61. Three-year-old geldings	7	
62. Two-year-old geldings	5	
	—	18

Clydesdale Mares and Fillies.

63. Mares of any age, with foal at foot, or due to foal before 31st July 1939	4	
Extra Stock	1	
64. Yeld mares born before 1936	7	
65. Three-year-old yeld mares or fillies	7	
66. Two-year-old fillies	11	
67. One-year-old fillies	14	
	—	44

Percherons.

68. Mares of any age, with foal at foot, or due to foal before 31st July 1939	4	
69. Fillies born in 1936 or 1937	7	
	—	11

Hunters.

70. Hunter brood mares, with foal at foot, or due to foal before 31st July 1939	3	
71. Foals (drawn from Class 70)	3	
72. Geldings, born in 1936, in hand	4	
73. Fillies, born in 1936, in hand	4	
74. Geldings, born in 1937, in hand	3	
75. Fillies, born in 1937, in hand	4	
76. Colts or geldings, born in 1938, in hand	6	
77. Fillies, born in 1938, in hand	6	
78. Mares or geldings, born before 1935, to carry 14 stone and over, in saddle	9	
79. Mares or geldings, born before 1935, to carry under 14 stone, in saddle	12	
80. Mares or geldings, born in 1935, in saddle	4	
81. Hacks of hunter type, born in or before 1935, not exceeding 15.2 hands, in saddle	5	
	—	63

Riding Ponies.

82. Mares or geldings, any age, over 13.2 hands and not exceeding 14.2 hands, in saddle	6	
Extra Stock	1	
83. Mares or geldings, any age, over 12 hands and not exceeding 13.2 hands, in saddle	8	
84. Mares or geldings, any age, not exceeding 12 hands, in saddle	6	
	—	21

Hill Ponies.

85. Hill ponies (Highland, Fell or Dales), any age, in saddle	—	5

Highland and Western Island Ponies.

86. Stallions, born before 1937, not exceeding 14.2 hands	4	
Extra Stock	1	
87. Entire colts, born on or after 1st January 1937, not exceeding 14.2 hands	4	
88. Mares, any age, not exceeding 14.2 hands, with foal at foot, or due to foal before 31st July 1939	8	
89. Yeld mares or fillies, born before 1937, not exceeding 14.2 hands	11	
90. Fillies, born on or after 1st January 1937, not exceeding 14.2 hands	7	
	—	35

Shetland Ponies.

91.	Stallions, not exceeding 10½ hands, born before 1936	6	
	Extra Stock	1	
92.	Entire colts, not exceeding 10½ hands, born in 1936 or 1937	5	
93.	Mares, not exceeding 10½ hands, with foal at foot, or due to foal before 31st July 1939	7	
94.	Yeld mares, not exceeding 10½ hands	5	
95.	Fillies, not exceeding 10½ hands, born in 1936 or 1937	6	
		—	30

Hackneys in Harness.

96.	Stallions, mares, fillies, or geldings, any age, in harness, exceeding 14 hands	6	
97.	Stallions, mares, fillies, or geldings, any age, in harness, not exceeding 14 hands	4	
		—	10

Horses in Harness.

98.	Draught geldings, any age, in harness, shown in cart or lorry. (Cancelled owing to insufficient entries)		
99.	Horses, any age, in harness, shown in van or light lorry	—	12
			295

Jumping.

1.	Horses or ponies, any height	21	
2.	Horses or ponies, any height—confined to competitors permanently resident in Scotland	21	
3.	Horses or ponies, any height—handicap	21	
4.	Horses or ponies, any height	28	
5.	Horses or ponies, any height—handicap	20	
		—	111

SHEEP.

Blackface.

100.	Tups, three shear and over	8	
	Extra Stock	1	
101.	Tups, two shear	12	
102.	Shearling tups	25	
103.	Tup lambs	16	
104.	Ewes above one shear, with lamb at foot	12	
	Extra Stock	1	
105.	Shearling ewes or gimmers	12	
106.	Ewe lambs	11	
		—	98

Cheviot.

107.	Tups above one shear	11	
108.	Shearling tups	15	
109.	Tup lambs	15	
110.	Ewes above one shear, with lamb at foot	8	
111.	Shearling ewes or gimmers	12	
112.	Ewe lambs	15	
		—	76

Border Leicester.

113.	Tups above one shear	9	
114.	Shearling tups	24	
115.	Tup lambs	30	
116.	Ewes above one shear	14	
117	Shearling ewes or gimmers	19	
118.	Ewe lambs	14	
		—	110

HALF-BRED.

119.	Shearling tups	5	
120.	Ewes above one shear	5	
121.	Shearling ewes or gimmers	6	
122.	Ewe lambs	8	
		—	24

OXFORD DOWN.

123.	Shearling tups	9	
124.	Shearling ewes or gimmers	8	
125.	Tup lambs	8	
126.	Ewe lambs	7	
		—	32

SUFFOLK.

127.	Tups, one shear and over	6	
128.	Shearling ewes or gimmers	10	
129.	Tup lambs	10	
130.	Ewe lambs	10	
		—	36

SHETLAND.

(For Exhibition only)

	Aged ram	1	
	Shearling ram	1	
	Shearling ewes (pen of 3 Black)	1	
	Shearling ewes (pen of 3 Moorit)	1	
		—	4
			380

GOATS.

131.	Female goats, Toggenburg, British Toggenburg, or British Alpine, in milk, any age	7	
	Extra Stock	1	
132.	Female goats, Saanen, or British Saanen, in milk, any age	2	
	Extra Stock	2	
133.	Female goats, any other variety, in milk, any age	3	
	Extra Stock	2	
134.	Goatlings, Toggenburg, British Toggenburg, or British Alpine, over one but not exceeding two years	4	
135.	Goatlings, any other variety, over one but not exceeding two years	4	
136.	Female kids, any variety, not exceeding one year	10	
137.	Male kids, any variety, not exceeding one year	3	
		—	38

MILKING COMPETITIONS.

138.	For quality, open to Classes 131, 132, and 133 (13 entries)	...	
139.	For quantity, open to Classes 131, 132, and 133 (13 entries)	...	
		—	...
			38

PIGS.

LARGE WHITE.

140.	Boars born before 1938	7	
	Extra Stock	1	
141.	Boars born in 1938 before 1st July	7	
142.	Boars born in 1938 on or after 1st July	12	
143.	Boars born in 1939	16	
144.	Sows born before 1938	11	
145.	Sows born in 1938 before 1st July	12	
146.	Sows born in 1938 on or after 1st July	14	
147.	Sows born in 1939	16	
		—	96

LARGE BLACK.

148. Boars born before 1939	6	
149. Boars born in 1939	4	
150. Sows born before 1938	6	
151. Sows born in 1938	6	
152. Sows born in 1939	5	
		27

ESSEX.

153. Boars born in 1938 on or after 1st July	3	
154. Sows born in 1938	5	
155. Sows born in 1939	6	
		14
		137

POULTRY.

1–118.	529

DAIRY PRODUCE.

1–4.	53

HONEY, &c.

1–21.	172

RURAL INDUSTRIES.

1-29.	451

BUTTERMAKING.

Open	56

HORSE-SHOEING, &c.

Class 1. Shoemaking	46
Class 2. Horse-shoeing	45
	91

LIVE STOCK JUDGING.

Open to Competitors 18 to 23 years of age	207

POULTRY JUDGING.

Open to Competitors under 26 years of age	30

SUMMARY.

1. Cattle	454
2. Horses	295
3. Jumping	111
4. Sheep	380
5. Goats	38
6. Pigs	137
7. Poultry	529
8. Dairy Produce	53
9. Honey, &c.	172
10. Rural Industries	451
11. Buttermaking	56
12. Horse-Shoeing, &c.	91
13. Live Stock Judging	207
14. Poultry Judging	30
	3004

The following table gives a comparative view of the entries of cattle, horses, sheep, goats, pigs, poultry, rabbits, honey, dairy produce, wool, rural industries, &c., and implements, of the value of the premiums offered, and of the receipts at the entrance-gates, grand stands, and for catalogues at the Shows which have been held in the Edinburgh Show Division:—

Year.	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Honey, &c.	Dairy Produce.	Wool.	Rural Industries.	Horse-Shoeing.	Live Stock Judging.	Poultry Judging.	Butter-making.	Imple-ments.	Premiums.	Drawings at Show.
1822	58	..	1	..	2	..	..	..	..	..	..	..	..	..	..	..	£78	£51
1823	44	..	8	..	5	..	..	..	..	..	..	..	..	..	..	..	110	75
1824	62	..	8	..	2	..	..	..	..	..	..	..	..	..	..	30	105	59
1825	42	..	6	..	4	..	..	..	..	..	..	..	..	..	..	20	110	80
1827	44	..	24	..	6	..	..	..	..	..	..	..	..	..	..	50	224	83
1842	295	179	175	..	29	..	..	..	38	13	..	..	..	..	..	200	1200	1,373
1848	351	142	325	..	50	64	..	..	165	..	..	..	..	..	..	310	1153	1,398
1859	332	188	288	..	54	109	..	..	54	..	..	..	..	..	..	980	1500	2,343
1869	310	212	340	..	22	239	..	..	..	..	..	..	..	..	..	1900	1600	4,078
1877	339	342	305	..	30	234	..	..	..	..	..	..	..	..	..	2292	2714	6,734
1884	580	453	493	..	35	253	..	..	104	..	..	..	..	..	..	2282	4343	6,548
1893	380	349	294	..	31	360	..	..	88	..	..	..	..	..	..	2268	2600	4,918
1899	386	518	477	..	46	551	..	..	44	14	..	..	..	..	..	2585	3845	10,231
1907	363	464	352	..	58	605	..	..	93	..	..	..	..	..	..	2140	3613	7,588
1919	215	301	221	60	43	398	..	35	48	49	..	..	..	..	..	1605	4517	17,377
1927	462	357	493	63	201	724	184	150	87	75	489	88	56	..	..	2874	6049	12,315
1931	635	389	684	47	117	644	125	143	49	65	551	154	113	..	125	2991	9608	12,478
1939	454	295	380	38	137	529	..	172	53	..	451	91	207	30	56	2673	7039	16,443

A COMPARISON.

The following figures relating to some of the most successful Shows the Society has held will be perused with interest:—

	Cattle.	Horses.	Sheep.	Goats.	Pigs.	Poultry.	Rabbits.	Total Live Stock.	Implements.	Premiums.	Drawings at Show.	Profit.
Glasgow, 1867 .	286	212	257	..	58	150	..	963	1344	£1600	£3,005	£1307
Edinburgh, 1869	310	212	340	..	22	239	..	1123	1900	1600	4,078	2067
Glasgow, 1875 .	411	405	296	..	48	479	..	1639	2220	2665	6,231	3316
Edinburgh, 1877	339	342	305	..	30	234	..	1250	2292	2714	6,734	3710
Edinburgh, 1884	580	453	493	..	35	253	..	1814	2282	4343	6,548	1855
Edinburgh, 1893	380	349	294	..	31	360	..	1414	2268	2600	4,918	2323
Aberdeen, 1894 .	314	324	184	..	34	365	..	1221	2532	2440	5,121	1678
Perth, 1896 .	292	258	204	..	20	374	..	1148	1945	2205	4,788	2511
Glasgow, 1897 .	317	350	245	..	30	275	..	1217	2227	2897	4,392	2021
Edinburgh, 1899	386	518	477	..	46	551	..	1978	2585	3844	10,285	3911
Stirling, 1900 .	321	288	369	..	28	457	..	1463	2095	2915	4,305	1078
Inverness, 1901 .	360	257	204	..	22	499	..	1340	1460	2806	2,485	99
Aberdeen, 1902 .	330	253	243	..	42	475	..	1343	1988	2796	4,413	1604
Perth, 1904 .	348	315	283	..	35	413	..	1394	1972	3058	4,993	1828
Glasgow, 1905 .	310	462	284	..	60	534	..	1750	1875	3702	4,473	1208
Peebles, 1906 .	253	258	291	..	40	438	..	1280	1658	3072	2,596	416
Edinburgh, 1907	363	464	352	..	58	605	..	1842	2140	3614	7,061	2309
Aberdeen, 1908 .	331	299	237	..	42	509	..	1418	1931	3045	4,596	1881
Stirling, 1909 .	330	355	249	..	54	539	..	1527	1977	3017	4,638	1100
Dumfries, 1910 .	270	355	295	..	54	481	..	1455	1950	3057	3,411	562
Paisley, 1913 .	408	472	334	..	48	536	..	1798	1968	5109	6,468	2527
Edinburgh, 1919	215	301	221	60	43	398	..	1238	1605	4517	17,377	3275
Aberdeen, 1920 .	340	250	279	19	112	597	..	1597	2065	4608	14,120	1679
Stirling, 1921 .	367	279	299	59	188	582	..	1774	2201	5055	12,822	2350
Dumfries, 1922 .	422	272	339	41	229	588	..	1891	2156	5488	11,452	1090
Perth, 1924 .	406	283	366	21	202	760	..	2035	2382	5712	10,758	2311
Glasgow, 1925 .	461	340	349	31	178	577	178	2114	2570	6136	12,865	4226
Kelso, 1926 .	430	284	597	31	159	546	108	2155	2366	6004	9,218	324
Edinburgh, 1927	462	357	493	63	201	724	184	2484	2874	6049	12,315	2990
Aberdeen, 1928 .	421	277	349	25	80	578	120	1850	2377	6131	11,031	1882
Edinburgh, 1931	635	389	684	47	117	644	125	2641	2991	9608	12,478	704
Dundee, 1933 .	443	256	396	22	75	491	89	1772	2471	6979	12,698	4813
Glasgow, 1934 .	507	287	356	27	155	532	85	1949	2832	7034	13,535	3534
Aberdeen, 1935 .	464	230	386	20	230	500	..	1830	2778	6940	11,372	645
Alloa, 1937 .	412	290	396	25	135	551	..	1809	2638	6667	11,457	4002
Dumfries, 1938 .	402	300	263	31	150	536	..	1682	2692	6779	10,970	614
Edinburgh, 1939	454	295	380	38	137	529	..	1833	2673	7039	16,443	4918

CATTLE.

Entries for Cattle, totalling 454, were larger than for some years, bringing the number back to the average looked for at one of the most popular venues for the Show.

Numbering 57, the Shorthorn entry showed a welcome advance on the Dumfries figure, and the general quality was pronounced very good. Captain J. MacGillivray of Calrossie, Nigg, Ross-shire, carried off the President's Champion Medal with a fourteen-months-old red bull, "Muirside Ramsden King" (Fig. 11), bred by Mr James F. Innes, Brawlandknowes, Huntly, his sire being "Coldoch Salute," 275,891, and dam "Muirside Miss Ramsden 2nd," 178,755. This young bull, possessing quite remarkable symmetry and style, followed up his owner's success at Alloa, 1937, when his great bull, "Calrossie Control," gained the premier breed honours. In addition to the Championship, he was awarded the Duthie Perpetual Challenge Cup, the J. P. Brown Perpetual Challenge Cup, the Tweeddale Gold Medal, the Emilio R.

Casares, Junior, Memorial Champion Cup, and the Shorthorn Society's Prize of £20 for males. Mr James Durno, Uppermill, Tarves, Aberdeenshire, Chairman of Directors of the Society, gained the Reserve award, with a beautiful roan cow, "Secret Poppy," 147,835, of his own breeding, and she, of course, won the £20 Prize given by the Shorthorn Society for the best female shown. The Silver Cup presented by Mr W. M'Nair Snadden, M.P., for the best group of three Shorthorns, one male and two females, went to the Trustees of the late Mr R. Wylie Hill of Balthayock, Perth, the individual animals being "Balthayock Grand Butterfly," "Balthayock Butterfly 12th," 188,261, and "Balthayock Butterfly 14th," 198,545.

The Aberdeen-Angus classes brought out a capital entry of 105 animals. There were very few absentees, and it was everywhere remarked that there had not been a better display of the breed, both as regards character and condition, for years. The President's Champion Medal was again won on this occasion by a female, the six-year-old cow, "Eulima 6th of Kilham," 102,652 (Fig. 12), bred and exhibited by Captain A. L. Goodson, Kilham, Mindrum, Northumberland. Her sire was "Pelorus of Bywell," 78,476, and her dam "Eulima 81st," 78,959, and, having won the First Prize in the senior class at Alloa, she was shown as "Extra Stock." She was brought out in good form and looked well fitted to add to her Championship laurels already won at the "Royal," the "Highland," and the "Great Yorkshire." Her other honours comprised the Paisley Perpetual Gold Challenge Cup, the Aberdeen-Angus Cattle Society's Champion Gold Medal, and the Silver Cup presented by Mr Falconer L. Wallace for the best female. The Reserve award was also gained by a female, a five-year-old cow, "Gammer Ebenil," 104,726, the property of Messrs J. & A. Beddie, Banks, Strichen, and bred by Mr James Beddie. She was Reserve for the Paisley Perpetual Gold Challenge Cup, and was awarded the Harviestoun Challenge Cup for the best cow, for which the Champion was ineligible. The Earl of Rosebery, D.S.O., M.C., Dalmeny House, Edinburgh, won the Ballindalloch Challenge Cup for best bull of any age, with "Bemaster of Dalmeny," 89,935, and the Señor Eduardo Estanguet Silver Cup for young bulls went to the MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, for a Dalmeny-bred yearling, "Eiradakin of Dalmeny," 104,106. Lord Rosebery also obtained the Silver Cup given by Mr J. E. Kerr of Harviestoun for the best group of three animals, his lot consisting of the above-mentioned "Bemaster," "Berette Maid of Ballindalloch," 102,715, and "Gita of Borgie," 113,126.

A slight decline in numbers compared with the Dumfries entries did not detract to any extent from the interest of the display of Galloways. The quality was well up to standard, and in some classes keen competition was experienced. The Judge selected as Champion a yearling bull, "Keynote 2nd of Tundergarth Mains," 21,626 (Fig. 13), exhibited by Mr William M'Kill, Mitchelhill, Broughton, and bred by Mr Peter Wilson, Tundergarth Mains, Lockerbie. He was sired by "Matthew Mark of Knockdon," 20,656, out of "Nancy 67th of Tundergarth Mains," 36,953, and made a splendid appearance, exhibiting all the points associated with a first-class Galloway. The Dr Gillespie Memorial Challenge Trophy, confined to the breeding classes, was also awarded to the Champion, and the Galloway Cattle Society's Cup for the best animal of the opposite sex was secured by Mr C. E. Graham, Bogrie, Canonbie, with his heifer, "Glenzier Genevieve 7th," 39,762. Mr Thomas Carlyle, Milnholm, Langholm, occupied the Reserve position with his home-bred yearling bull, "Milnholm Rustler," 21,297.

Though the Belted Galloways showed a slight decrease in numbers compared with the entries at Dumfries the interest in the breed was well maintained, and a capital lot were forward with the quality overhead excellent. "Mark Advocate," 1085 B. (Fig. 14), completed a 'hat-trick' in the competition for the President's Champion Medal by winning the honour for the third year in succession. Nearing the completion of his seventh year, he showed little or no diminution of the character and condition which brought him his previous successes at the "Highland" and other shows. The Nalc Co. Ltd., Gartmore, Perthshire, were the exhibitors, and he was bred by Mr Robert Graham, Auchengassel, Twynholm, his sire being "Gartmore Herbert," 477 B., and dam "Mark Soncie," 221 B. He was, of course, an "Extra Stock" entry and was eligible for the Knockbrex Challenge Cup, which he was awarded. The Reserve Championship went to Mr Andrew Graham, Auchengassel, Twynholm, for his four-year-old cow, "Mark Doris," 3570 B., a particularly fine example of the breed, which also won the Ian Hamilton Silver Challenge Cup, open to the sex opposite to that of the Knockbrex Cup winner.

There was a good average entry of Highland Cattle, with the quality well up to standard, the heifers making a specially good showing. The Championship was decided in favour of a light-red yearling bull, "Fear Diona Ile," 4023 (Fig. 15), bred and owned by Mr John G. Morrison of Islay, Islay House, Bridgend. He is a son of "Cailean A'Ghlinn of Achnacloich," 3810, out of "Mairi Ruadh Ile," 11,284, and his fine shape and bloom made an excellent impression on this his first show experience. In addition to the President's Champion Medal he took the Highland Cattle Society's Perpetual Victory Challenge Cup as leader in the male classes. Miss Dunlop of Shieldhill, Biggar, gained the Reserve award, and also the Highland Cattle Society's Victory Cup for the best female, with her yellow yearling, "Maireared III. of Quothquan," 11,338.

Another fine entry of Ayrshires filled the judging ring, the total being only a few short of the Dumfries record of 100, and many notable exhibits attracted admiration. One has to go back ten years for the last male Champion, but the honour again fell to the sex on this occasion when "Burton Novelty," 36,153 (Fig. 16), a bull rising five years, headed the parade for Mr A. W. Montgomerie, Westburn Farm, Cambuslang. A magnificent animal of handsome proportions, dark-brown and white in colour, his victory was the more remarkable as this was only his second show appearance and his first "Highland." His breeders were Messrs W. & J. Logan, Burton Farm, Ayr, sire "Lessnessock Atlantic," 31,427, and dam "South Craig Mab 2nd," 38,471. The Cowhill Champion Cup for the best Ayrshire, and the Special Prize of £10 given by the Ayrshire Cattle Herd-Book Society for the leading male, were the awards gained by him to accompany the President's Champion Medal. Following him as Reserve came the four-year-old cow, "Howie's Twinkle 4th," 68,199, shown and bred by Messrs James Howie & Sons, Muirside, Dumfries, who also received the £10 Prize presented by the Ayrshire Cattle Herd-Book Society for the best female. A new award, the Trent Perpetual Challenge Trophy, presented by Messrs Boots Pure Drug Company Ltd., for the best group of three females in milk or in calf bred by the exhibitor, was secured by Mr John Clark, Dunrod Farm, Inverkip, the animals comprising his group being "Dunrod Susan 6th," 65,062, "Dunrod Pearl 11th," 48,169, and "Dunrod Lass 10th," 84,487.

There was a record display, numerically, of the British Friesian breed, the entries totalling 87, well distributed over the various classes, and with the standard of quality high there was keen competition for the honours. Repeating his success of the previous year, "Herrington (imported 1936) Leo," 46,237 (Fig. 17) carried off the President's Champion Medal for Mr Albert Weightman, Middle Herrington Farm, Sunderland. He was an "Extra Stock" entry, and, being shown in the best of trim, looked as worthy a winner as he did at Dumfries. He was bred in Holland over four years ago by Mr Arjan Wassenaar, Jelsum, Friesland, his sire being "Feikjes Bertus," 21,663 F.R.S., and dam "Lucie 42nd," 81,703 F.R.S. The Edinburgh Corporation Perpetual Gold

Challenge Cup was on this occasion allocated to the British Friesian classes, and was awarded to the Champion, which also won the MacRobert Champion Silver Bell and the Champion male prize of £5 given by the British Friesian Cattle Society. A very close second to Mr Weightman's winner was the fine home-bred heifer "Douneside Lod Lorna 2nd," 224,446, exhibited by the MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, which gained the Reserve award and the British Friesian Cattle Society's Champion Prize of £5 for the best female. The same Society's Silver Challenge Cup for the best group of three animals was also secured by the MacRobert Trustees with the Reserve Champion, "Douneside Lod Lorna 2nd," "Douneside Lod Aster," 237,934, and the two-year-old bull, "Douneside Lodbert 11th," 49,321.

HORSES.

There was an additional class for Percherons, but the number of horses fell slightly short of the total entries at Dumfries and showed a substantial decrease as compared with the Hundredth Show at Edinburgh in 1931.

The Clydesdale Stallions and Colts, if not so numerous as at the previous Show, fully lived up to the best traditions of the breed, and much interest was taken in the final adjudication of the class winners. The President's Champion Medal was won by the two-year-old "Gartness Control," 23,385 (Fig. 18), exhibited by Messrs G. & J. Campbell, Gartness, by Balfron, which as a yearling secured the Cawdor Cup and the Reserve Championship at Dumfries. A light-brown son of "Douglas Castle," 21,620, out of "Townhead Blossom," 61,591, he was bred by Mr Thomas Robertson, Townhead, Annbank, and in style, movement, size, and substance gave an excellent display. He was also awarded the Renfrewshire Perpetual Gold Challenge Cup for best stallion or colt. The Cawdor Challenge Cup, for which the Champion as a previous holder was not eligible, went to Mr James Kilpatrick, Craigie Mains, Kilmarnock, for his bay yearling "Craigie Independent," which was also of Townhead breeding, and the Reserve ticket was annexed by the same colt.

From an attractive entry of geldings the bay three-year-old, "Campbell" (Fig. 19), shown by Sir Kenneth S. Anderson, Bart., The Yair, Galashiels, was selected for the Championship Medal. He was bred by Mr William G. Campbell, Enrick, Gatehouse, and was the progeny of "Scotland's Marcellus," 21,383. He made an outstanding appearance, having the maximum size and weight for a horse of his age, and was superb in action. Along with the Championship he took the

James Clark Silver Challenge Cup for the best gelding. The runner-up was the bay gelding "Sir James," shown by Messrs Greig, Housenrigg, Brayton, Aspatria, sire "Nisbet Surprise," 21,786, taking the same position which he occupied at the Dumfries Show.

A second victory in the competition for the Cawdor Cup for females was won by Mr John M'Farlane, Baillielands, Auchterarder, his successful exhibit on this occasion being "Myrene" (Fig. 20), a beautiful roan two-year-old filly of his own breeding, by "Benedictine," 21,836, out of "Mora of Gleneagles," 55,419. Since her appearance at Dumfries, where she was first in her class, she has developed splendidly and was an outstanding Champion. The Reserve award went to Messrs David G. Findlay & Son, Rankinston House, Ayr, for their three-year-old yeld mare, "Rankinston Moss Rose," a daughter of "Craigie Beau Ideal," 21,856, bred by Mr John N. Watson, Tarelgin, Ochiltree.

For the first time Percherons were present at the Show in competitive classes, of which two were provided, one for mares and the other for fillies. There was an encouraging entry, and there was evidence of considerable interest in the exhibition of the handsome greys. The President's Champion Medal went to Mr A. W. Montgomerie, Westburn Farm, Cambuslang, for his five-year-old mare, "Motion," B 1612 (Fig. 21), sire "Genet," F 187,676, dam "Troyenne," F 144,318, bred by M. Marre, Montagne, France; and the Reserve award to the three-year-old filly "Millhills Saucy," B 1380, shown by Major William B. Robertson, Colton, Dunfermline, and bred by Mr Duncan M. Stewart of Millhills, Crieff.

While the figures in the Hunters section showed a considerable advance on the Dumfries entries, they were a long way behind the total reached at the Hundredth Show at Edinburgh. The quality was rather uneven, though the leading horses left nothing to be desired. Mr Donald Cross, Knockdon, Maybole, won the President's Champion Medal and the Dumfries Centenary Silver Challenge Cup for the best Hunter with his eight-year-old bay gelding "Ras" (Fig. 22), shown in a heavy saddle class. "Capplegill," a two-year-old bay home-bred gelding, received the Reserve ticket for Mr Thomas Douglas, Gatehousecote, Hawick; and the Champion Gold Medal for fillies, given by the Hunters' Improvement and National Light Horse Breeding Society, was awarded to "Shady Miss," 9250, a grey yearling, bred and exhibited by Sir John William Buchanan-Jardine, of Castle Milk, Bart., Lockerbie.

There was again an outstanding display of Highland and Western Island Ponies, which attracted interest and admiration from a large 'gallery.' Mr Thomas Purdie, Aucheneck, Killearn, was the exhibitor of the Supreme Champion, "Monamore," 5515 (Fig. 23), a grey dun yeld mare by "Glenbruar," 331, out of "Madge Wildfire II.," 4703, her breeder being Mr Donald Mackelvie, New Lanark, Lamlash. Making light of her fourteen years she exhibited points in style and movement which few youngsters could produce. She also carried off the Kinmonth Perpetual Gold Challenge Quaich and the Special Prize from the Highland Pony Society for the best of the females. A dun six-year-old mare, "Gipsy Diamond," 6773, followed her as Reserve Champion, securing the honour for Mrs J. A. Cameron, Glenfinlas, Callander; and the Highland Pony Society's Special Prize for males was won by "Monarch," 2127, a three-year-old dun belonging to Mr T. G. Wilson, Carbeth Home Farm, Balfron Station.

The Shetland Pony classes filled well and, with many first-rate exhibits forward, the breed was as popular as ever. Mr J. E. Kerr of Harviestoun, Dollar, after having lost the Championship honour for a year, came back with a grand display of ponies which practically carried all before them. He received the President's Champion Medal for "Harviestoun Pearl," 4726 (Fig. 24), a black six-year-old yeld mare, home-bred, by "Fickle of Transy," 1260, out of "Harviestoun Pryde," 4544. Shown in the best of condition, this animal quite captivated the ringside. His brood mare of Harviestoun breeding, "Harviestoun Truda," born in 1934 and by the same sire, took the Reserve award. The Champion was awarded the Dundee Citizens' Perpetual Challenge Cup for the best Shetland Pony, and Mr Kerr also gained the Perpetual Silver Challenge Cup given by members of the Shetland Pony Stud-Book Society for the best group of three, which in addition to the Champion and Reserve Champion contained his three-year-old colt "Harviestoun Pan." The Stud-Book Society's Silver Medal, competed for by the sex opposite to that of the Champion, fell to "Harviestoun Beau," 1369, a six-year-old stallion owned by Miss A. R. Ritchie, Netherley House, near Stonehaven.

The entries in the Hackneys in Harness classes were all put forward by Scottish exhibitors, and Mr R. R. Speir, 17 Broompark Drive, Glasgow, was successful in the Championship with his aged mare "Miss Appleby," 26,052 (Fig. 25), bred by Mr J. R. Brammer, Childer Street, Doncaster, the Reserve being "Knight of the Thistle," G 567, shown by Mr William Kinross, 13 Clarendon Place, Stirling.

Classes were also provided for Hill Ponies, Riding Ponies, and Horses in Harness. While better advantage might have been taken of the Harness classes, there were many interesting exhibits among the Saddle Ponies, and as usual their displays were much appreciated.

The Jumping Competitions at the Highland Shows are always followed with keen and critical interest by numerous spectators, and this year's exhibition was no exception. Mr Henry Hall, Whitchester, Heddon-on-the-Wall, brought off a good victory in the open classes by securing the Champion Prize of £10 with his gelding "Gay Boy."

SHEEP, GOATS, PIGS, &c.

Sheep entries came back again to normal numbers, and there were strong representations of the principal classes. Blackface, Cheviot, and Border Leicester breeders had the best of their flocks out in strong force, and there were excellent leaders in all sections. The Border Leicesters all but succeeded in establishing a record exhibit, from which Mr R. C. Cameron, Greenlawdean, Berwickshire, secured the Championship with a shearling ram of fine quality, "Lawson's Glory," 11,995. Goats were not quite so well represented as at last Show, but in quality were well up to standard. Three breeds were again provided for in the Pigs section—Large White, Large Black, and Essex. There were satisfactory entries in each. The outstanding result was the success of the animals bred by the late Mr J. E. B. Cowper, Gogar Mains, Edinburgh, shown by his Executor, which won the Championship and led in both male and female classes. The President's Champion Medal winners in the Sheep, Goats, and Pigs sections are illustrated in Figs. 26 to 35.

In the Poultry section competition was again keen and the number and quality of the entries well up to the recent Shows. Messrs W. Binnie & Son, Garth House, Denny, who won the late Lord Dewar's Champion Silver Salver outright by completing their third successive Championship at Dumfries, kindly re-presented the Salver as a permanent trophy, and it was won by Mr T. G. Wilson, Carbeth Home Farm, Balfron Station, with a Light Sussex cock. Entries for the various classes in Dairy Produce, Honey, and Rural Industries maintained or surpassed the improvement shown at Dumfries, the display of Bee Appliances, Honey, &c., being one of the best on record.

Another advance in numbers was also to be noted in the Horse-shoeing and Shoe-making classes, and the skilful workmanship of the competitors attracted a continuous crowd of spectators.

The interest in the Live Stock Judging Competition has apparently not yet reached its 'peak,' for there was a further addition to the number of entrants, the total topping the 200 mark for the first time. The Gold Medal, given by Messrs

George Outram & Co., Ltd., Glasgow, for the best individual score was gained by Mr John Logan, Powis Main, Stirling, with 68 points, and West Perthshire and Dumbartonshire Young Farmers' Club (Team A.) won the 'Glasgow Herald' Challenge Cup in the Team Competition with a total of 280.

A Poultry Judging Competition, arranged in co-operation with the Scottish Association of Young Farmers' Clubs, was introduced for the first time. The First Prize for individual competition went to Mr Henry Archibald, Brucefield, Shotts, and the winning team was entered by Lanarkshire.

There was a satisfactory entry for the Buttermaking Competitions, with keen emulation amongst the participants, and great interest in their work displayed by visitors to the Show.

The section devoted to the interest of Forestry was well attended by the public, who expressed deep appreciation of the various exhibits.

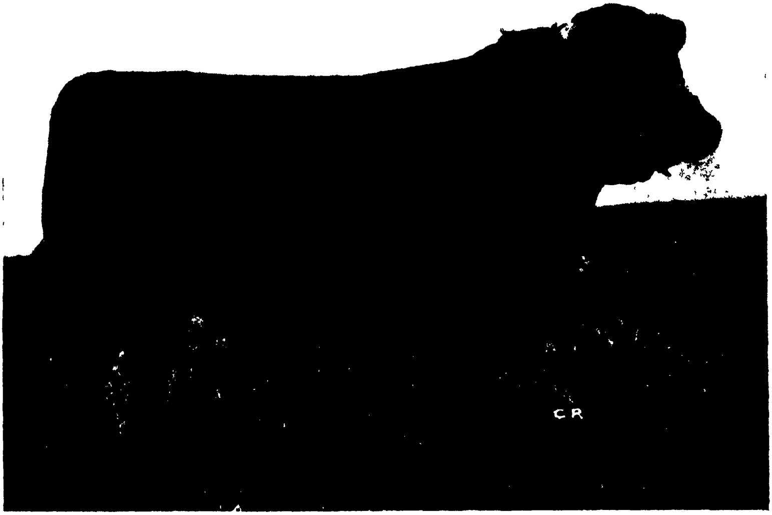

Fig. 11.—SHORTHORN BULL, "MUIRSIDE RAMSDEN KING."

Winner of President's Medal for best Shorthorn animal, Edinburgh Show, 1939. The property of Captain J. MacGillivray of Calrossie, Nigg, Ross-shire. Bred by Mr James F. Innes, Brawlandknowes, Huntly. Age one year and two months.

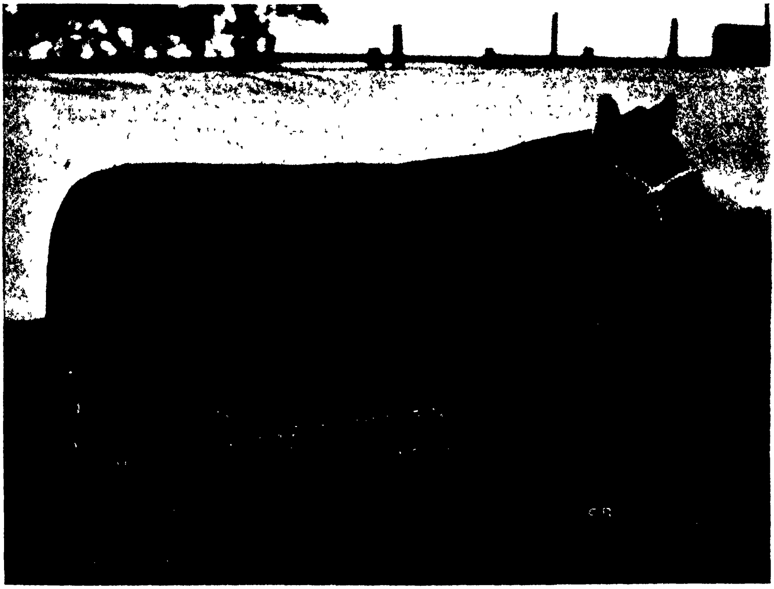

Fig. 12.—ABERDEEN-ANGUS COW, "EULIMA 6TH OF KILHAM" 102,652.

Winner of President's Medal for best Aberdeen-Angus animal, Edinburgh Show, 1939. Bred by and the property of Captain A. L. Goodson, Kilham, Mindrum, Northumberland. Age six years and six months.

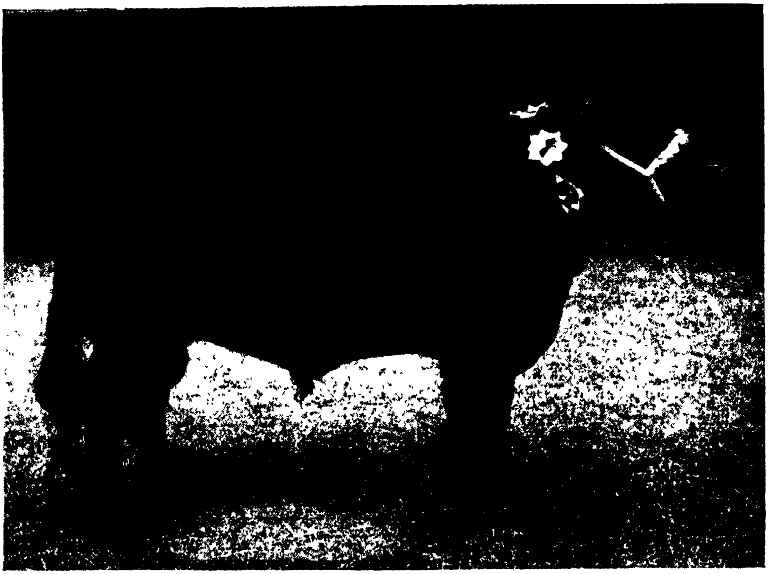

Fig. 13.—Galloway Bull, "Keynote 2nd of Tundergarth Mains" 21,626.

Winner of President's Medal for best Galloway animal, Edinburgh Show, 1939. The property of Mr William M'Kill, Mitchellhill, Broughton, by Biggar. Bred by Mr Peter Wilson, Tundergarth Mains, Lockerbie. Age one year and three months.

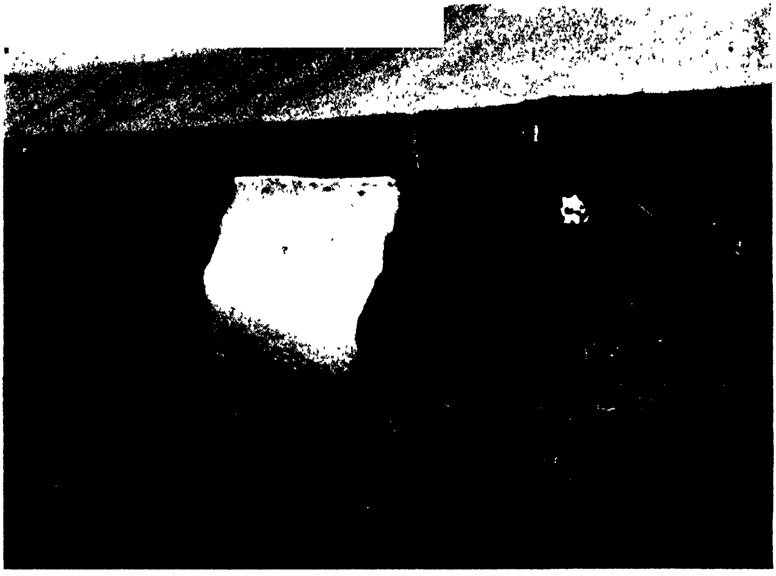

Fig. 14.—Belted Galloway Bull, "Mark Advocate" 1085 B.

Winner of President's Medal for best Belted Galloway animal, Edinburgh Show, 1939. The property of Messrs Nalc Co., Ltd., Estates Office, Gartmore, Perthshire. Bred by Mr Robert Graham, Auchengassel, Twynholm. Age six years and eight months.

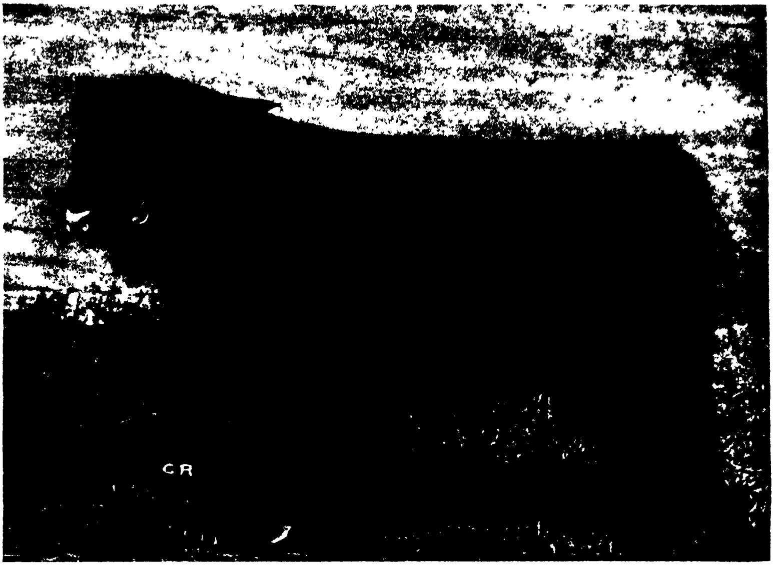

Fig. 15.—HIGHLAND BULL, "FEAR DIONA ILE" 4023.

Winner of President's Medal for best Highland animal, Edinburgh Show, 1939. Bred by and the property of Mr John G. Morrison of Islay, Islay House, Bridgend, Islay. Age one year and two months.

Fig. 16.—AYRSHIRE BULL, "BURTON NOVELTY" 36,153.

Winner of President's Medal for best Ayrshire animal, Edinburgh Show, 1939. The property of Mr A. W. Montgomerie, Westburn Farm, Cambuslang. Bred by Messrs W. & J. Logan, Burton Farm, Ayr. Age four years and eight months.

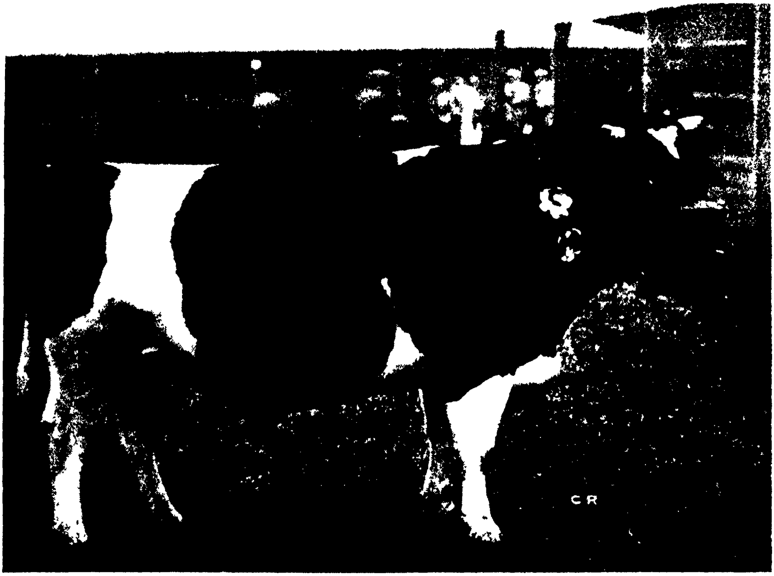

Fig. 17.—British Friesian Bull, "Herrington (imported 1936) Leo" 46,237.

Winner of President's Medal for best British Friesian animal, Edinburgh Show, 1939. The property of Mr Albert Weightman, Middle Herrington Farm, Sunderland. Bred by Mr Arjan Wassenaar, Jelsum, Friesland, Holland. Age four years and three months.

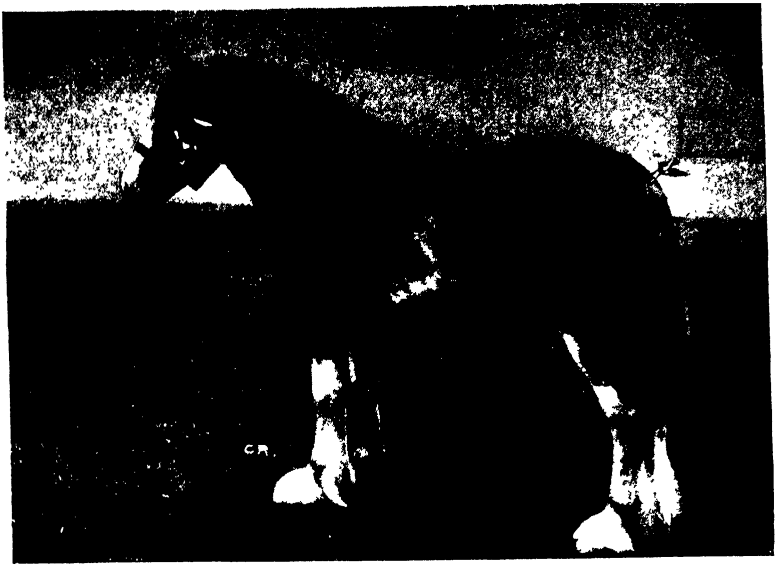

Fig. 18.—Clydesdale Entire Colt, "Gartness Control" 23,385.

Winner of President's Medal for best Clydesdale Stallion or Colt, Edinburgh Show, 1939. The property of Messrs G. & J. Campbell, Gartness, by Baltron. Bred by Mr Thomas Robertson, Townhead, Annbank. Age two years and two months.

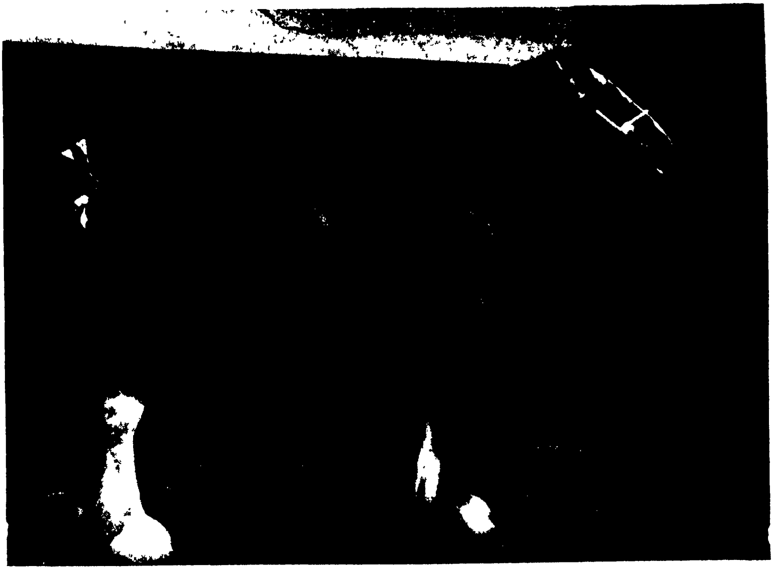

Fig. 19.—Clydesdale Gelding, "Campbell."

Winner of President's Medal for best Clydesdale Gelding, Edinburgh Show, 1939. The property of Sir Kenneth S. Anderson, Bt., K.C.M.G., The Yair, Galashiels. Bred by Mr William G. Campbell, Enrick, Gatehouse. Age three years.

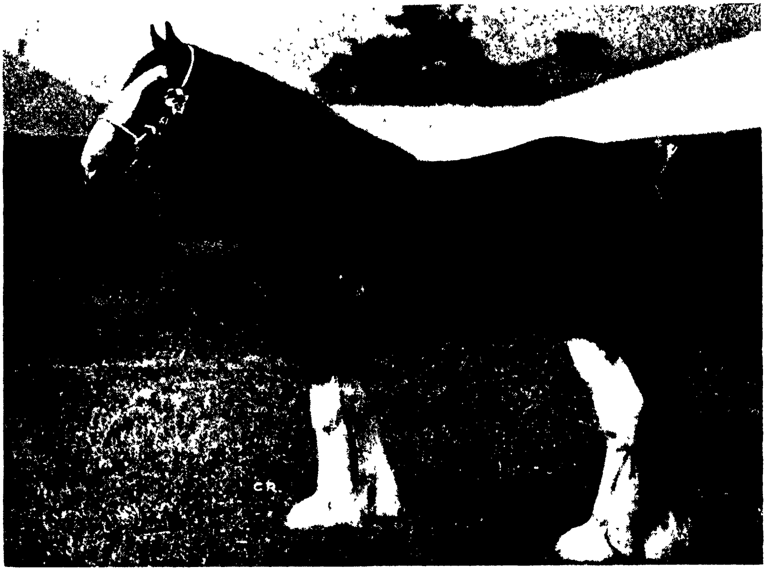

Fig. 20.—Clydesdale Filly, "Myrene."

Winner of President's Medal for best Clydesdale Mare or Filly, Edinburgh Show, 1939. Bred by and the property of Mr John M'Farlane, Bailielands, Auchterarder. Age two years and one month.

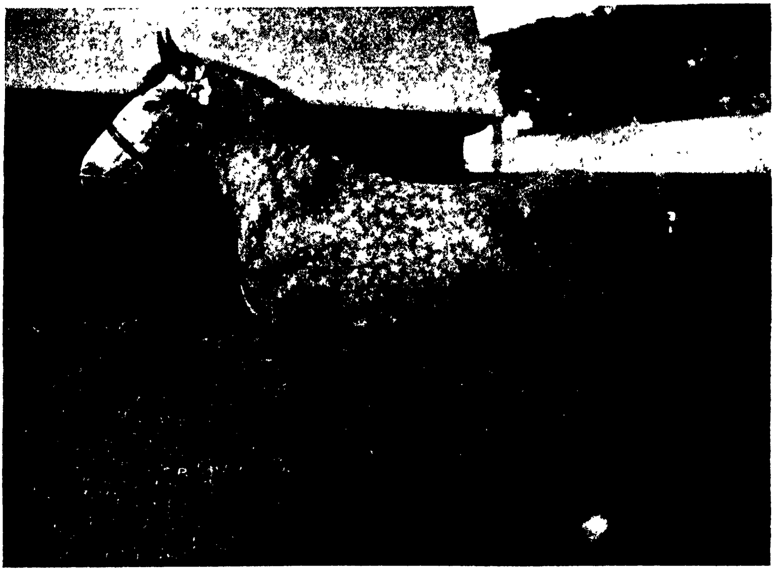

Fig. 21.—Percheron Mare, "Motion" B 1612.

Winner of President's Medal for best Percheron, Edinburgh Show, 1939. The property of Mr A. W. Montgomerie, Westburn Farm, Cambuslang. Bred by M. Marre, Montagne, France. Age five years and one month.

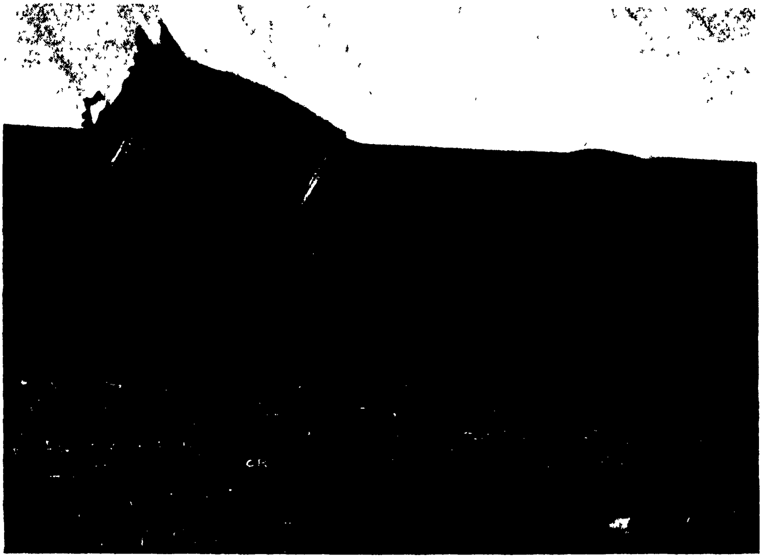

Fig. 22.—HUNTER GELDING, "RAS."

Winner of President's Medal for best Hunter, Edinburgh Show, 1939. The property of Mr Donald Cross, Knockdon, Maybole. Age eight years and one month.

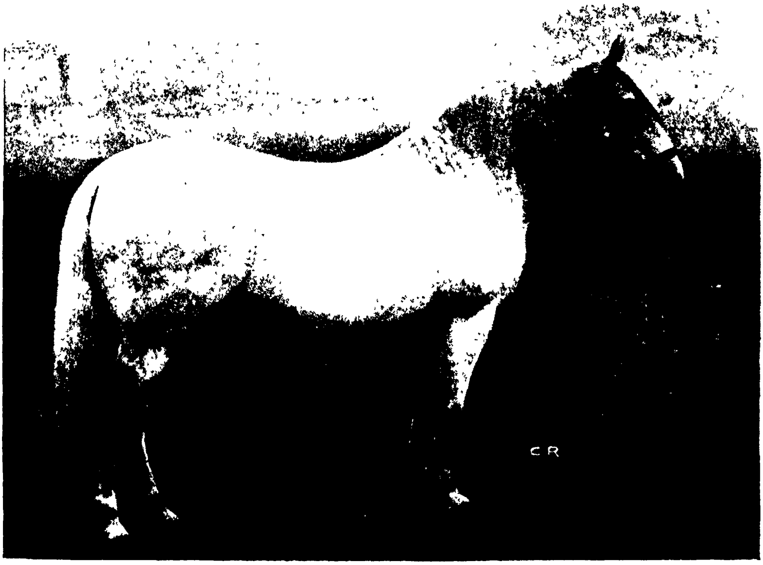

Fig. 23.—HIGHLAND PONY MARE, "MONAMORE" 5515.

Winner of President's Medal for best Highland or Western Island Pony, Edinburgh Show, 1939. The property of Mr Thomas Purdie, Aucheneck, Killearn, Stirlingshire. Bred by Mr Donald Mackelvie, New Lanark, Lamlash. Age fourteen years and two months.

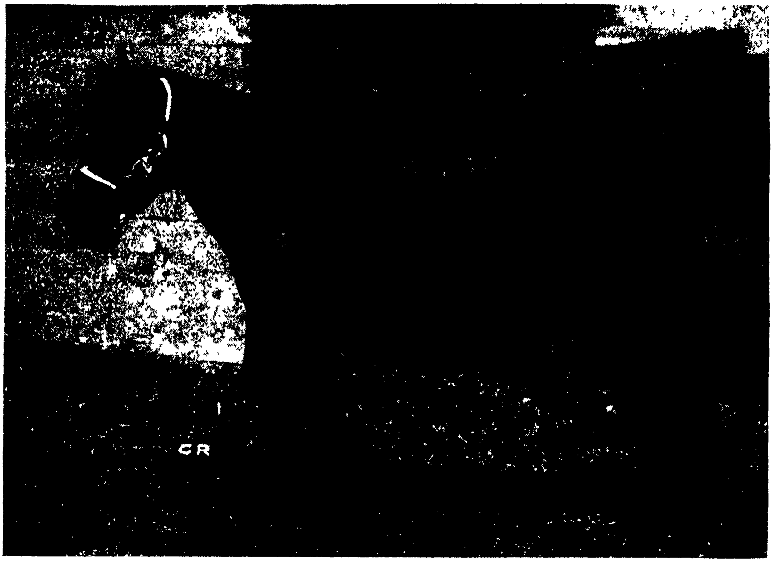

Fig. 24.—Shetland Pony Mare, "Harviestoun Pearl" 4726.

Winner of President's Medal for best Shetland Pony, Edinburgh Show, 1939. Bred by and the property of Mr J. E. Kerr of Harviestoun, Dollar. Age six years.

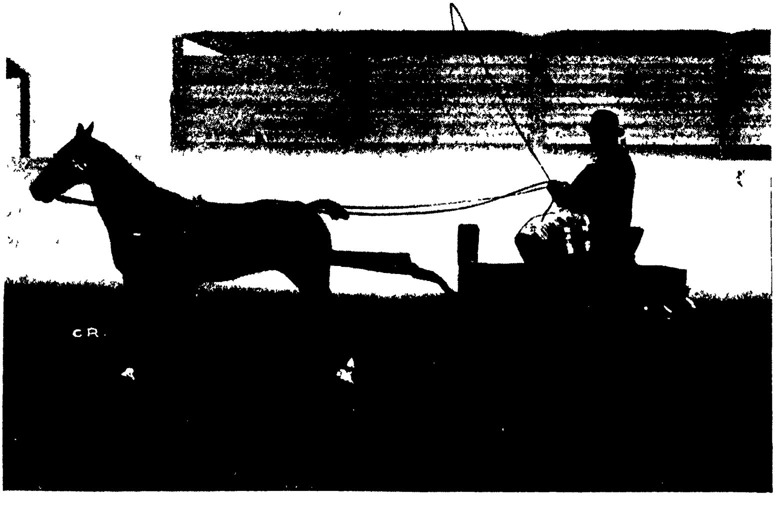

Fig. 25.—Mare in Harness, "Miss Appleby" 26,052.

Winner of President's Medal for best animal in the Classes for Hackneys in Harness, Edinburgh Show, 1939. The property of Mr R. R. Speir, 17 Broompark Drive, Glasgow. Bred by Mr J. R. Brammer, Childer Street, Doncaster. Age sixteen years and one month.

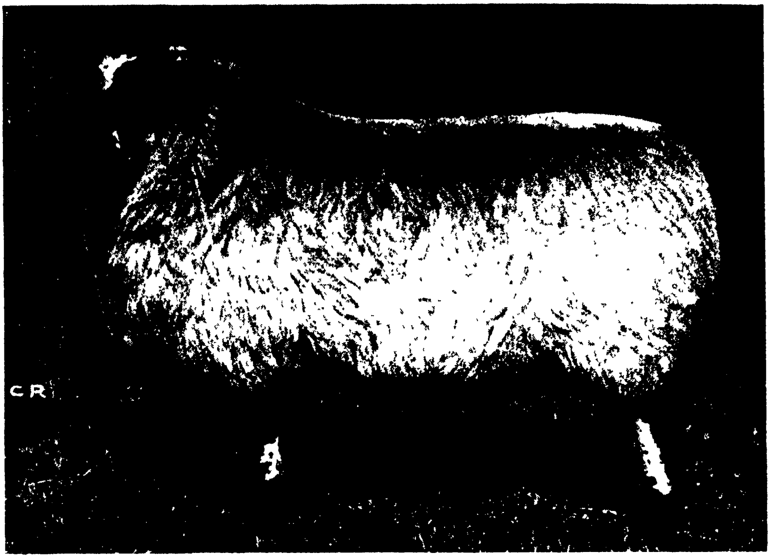

Fig. 26.—Blackface Shearling Ewe, "Queen o' the South."

Winner of President's Medal for best Blackface Sheep, Edinburgh Show, 1939. Bred by and the property of Mr James Macfarlane, Steps of Cally, Blairgowrie.

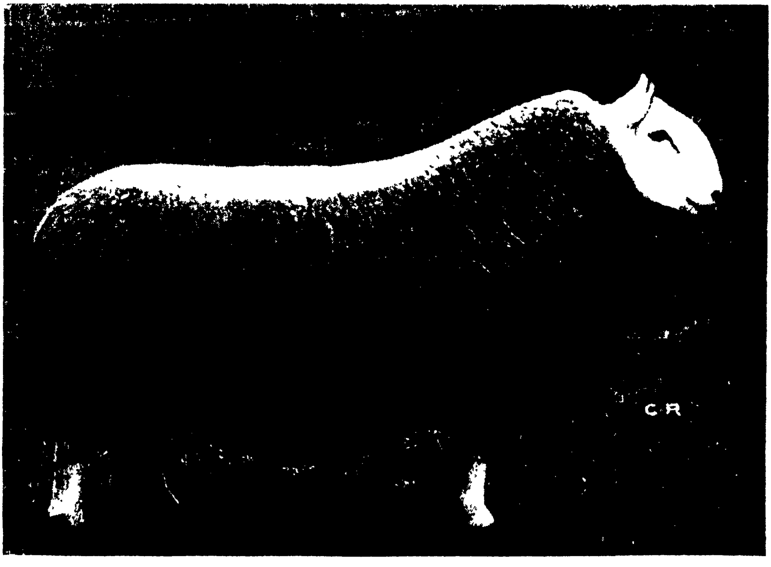

Fig. 27.—Cheviot Tup.

Winner of President's Medal for best Cheviot Sheep, Edinburgh Show, 1939. Bred by and the property of Mr Arthur Elliot, Hindhope, Jedburgh. Age two shear.

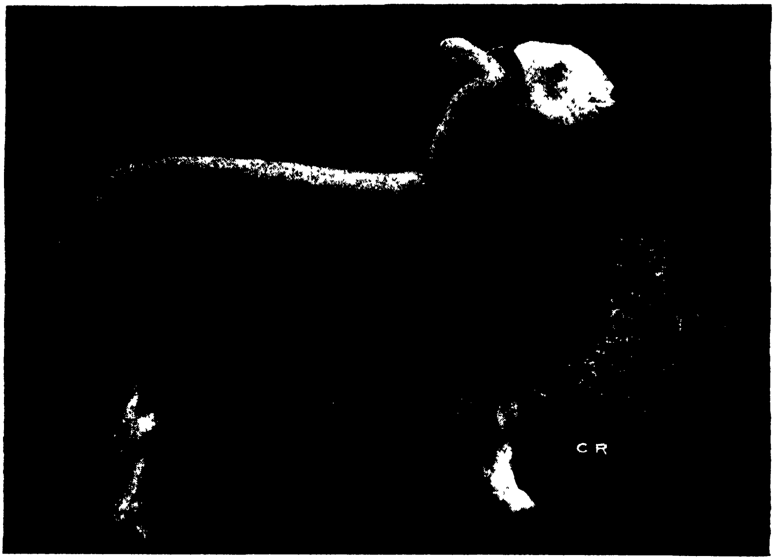

Fig. 28.—Border Leicester Shearling Tup, "Lawson's Glory" 11,995.

Winner of President's Medal for best Border Leicester Sheep, Edinburgh Show, 1939. The property of Mr R. C. Cameron, Greenlawdean, Berwickshire. Bred by Mr John Lawson, Elsrickle Mains, Biggar.

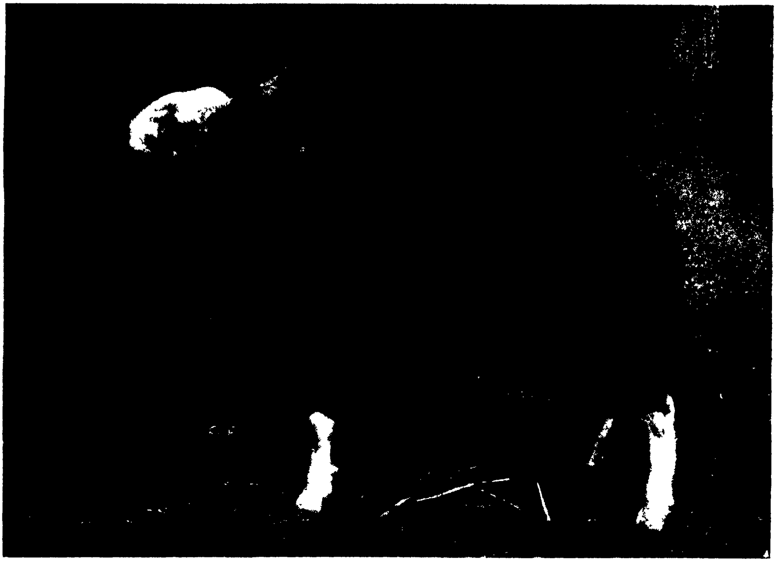

Fig. 29.—Half-Bred Ewe Lamb.

Winner of President's Medal for best Half-Bred Sheep, Edinburgh Show, 1939. Bred by and the property of Mr Thomas Armstrong, Eastcote, Hawick.

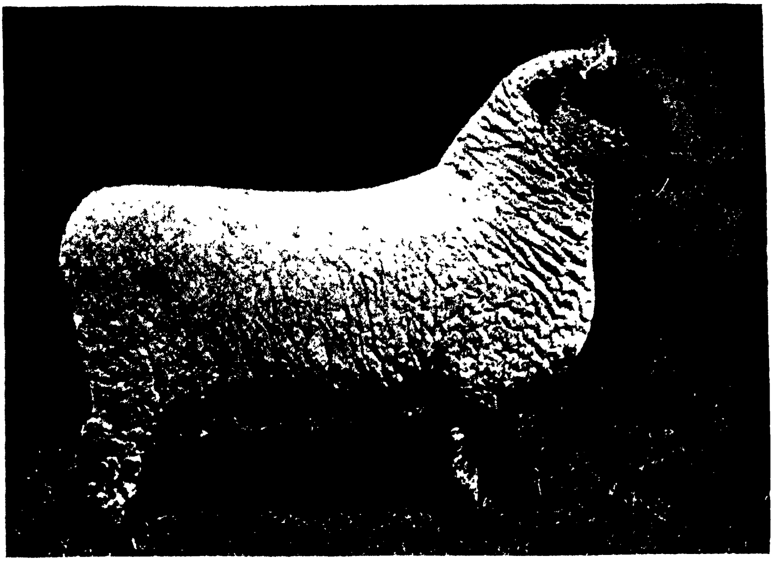

Fig. 30.—OXFORD DOWN SHEARLING TUP.

Winner of President's Medal for best Oxford Down Sheep, Edinburgh Show, 1939. Bred by and the property of Messrs T. & M. Templeton, Sandyknowe, Kelso.

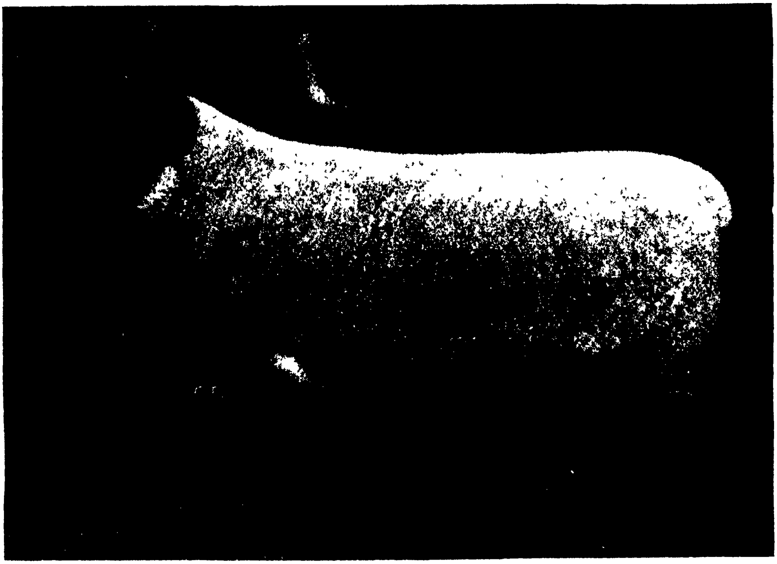

Fig. 31.—SUFFOLK TUP, "SOUTHBURN BARONET 3RD" 25,133.

Winner of President's Medal for best Suffolk Sheep, Edinburgh Show, 1939. Bred by and the property of Sir Prince Prince-Smith, Bt. Southburn, Driffield, East Yorks. Age two shear.

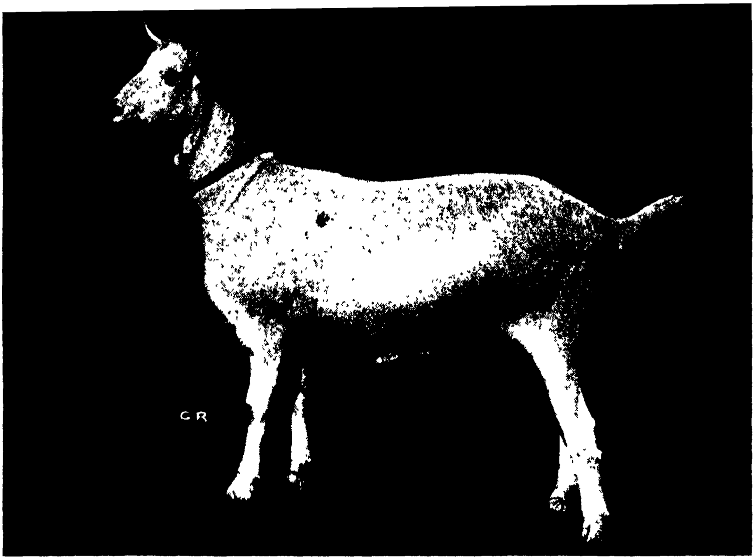

Fig. 32.—British Saanen Goatling, "Mostyn Marina" BS 1520.

Winner of President's Medal for best animal in the Goat Classes, Edinburgh Show, 1939. Bred by and the property of Miss Mostyn Owen, Spen House, Minskip, Boroughbridge, Yorks. Age one year and three months.

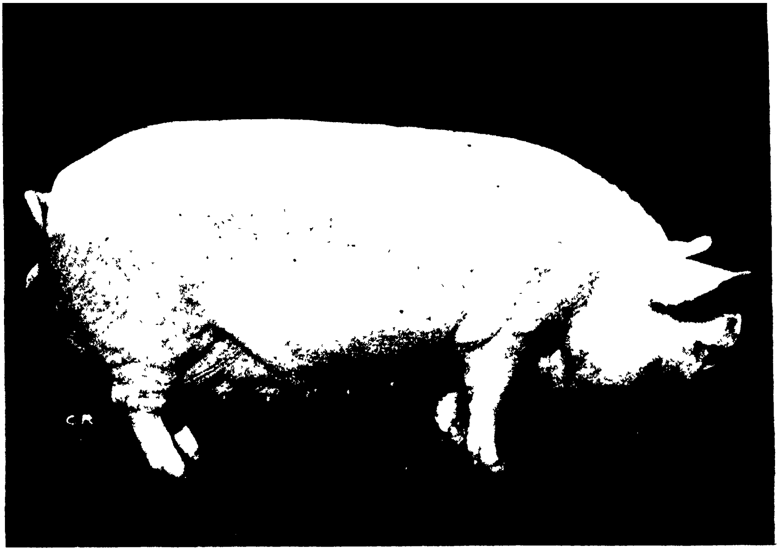

Fig. 33.—Large White Sow, "Gogar Queen Mary 3rd" 259,642.

Winner of President's Medal for best Large White Pig, Edinburgh Show, 1939. The property of the Executor of the late John E. B. Cowper, Gogar Mains, Edinburgh. Bred by the late John E. B. Cowper, Gogar Mains, Edinburgh. Age four years and three months.

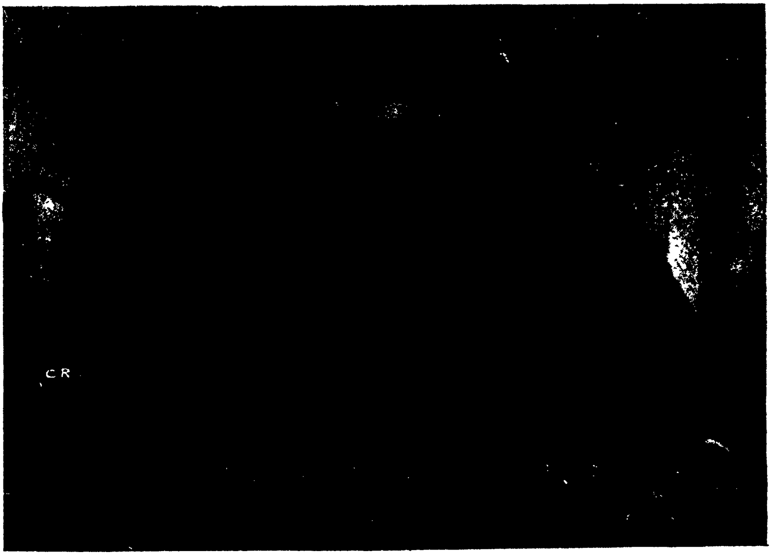

Fig. 34.—Large Black Sow, "Thorn Matilda 2nd" S 980.

Winner of President's Medal for best Large Black Pig, Edinburgh Show, 1939. Bred by and the property of Mr Wyndham T. Vint, Thorn Cottage, Wroot, Doncaster. Age one year and six months.

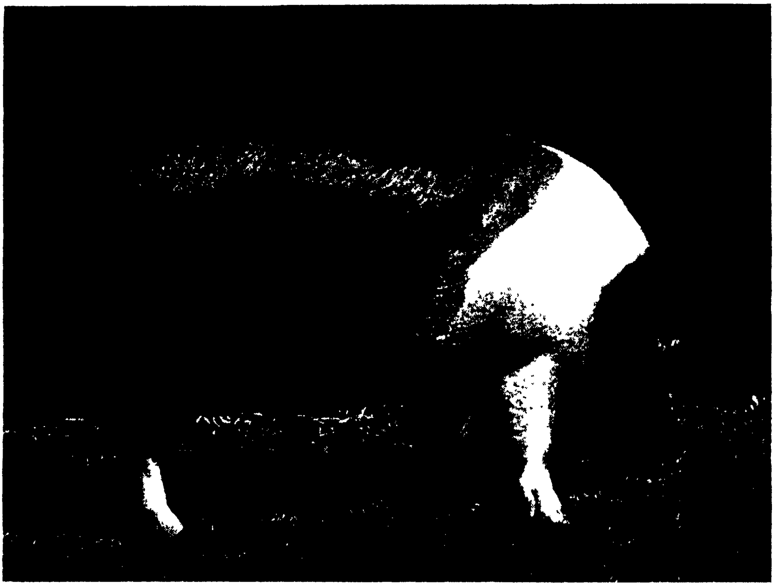

Fig. 35.—Essex Sow, "Kirton Lady 3rd" 30,884.

Winner of President's Medal for best Essex Pig, Edinburgh Show, 1939. Bred by and the property of Messrs W. Dennis & Sons, Ltd., Kirton, Boston, Lincs. Age one year and six months.

PREMIUMS AWARDED BY THE SOCIETY IN 1939.

EDINBURGH SHOW.

20th, 21st, 22nd, and 23rd June 1939.

ABBREVIATIONS.—V., *Very Highly Commended.* H., *Highly Commended.* C., *Commended.*

CATTLE

SHORTHORN.

PRESIDENT'S CHAMPION MEDAL for best Shorthorn Animal.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, "Muirside Ramsden King."

Reserve—No. 30 Durno, James, Uppermill, Tarves, Aberdeenshire, "Secret Poppy" (147,835).

The Duthie Perpetual Challenge Cup, value £150, *for best Animal in the Shorthorn Classes, "Extra Stock" eligible to compete.* This Cup was gifted by the late Mr William Duthie, Collynie.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, "Muirside Ramsden King."

The J. P. Brown Perpetual Challenge Cup, value £50, *for best Animal in the Shorthorn Classes, "Extra Stock" eligible to compete.* This Cup was presented by Mrs Brown, Dipple, in memory of her husband, the late Mr J. P. Brown, Dipple.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, "Muirside Ramsden King."

Silver Cup, value £50, *for the best Group of three animals in the Shorthorn Classes, consisting of one Bull and two Females, " Extra Stock " eligible to compete.* Given by Mr William M'Nair Snadden, M.P., of The Coldoch, Blair Drummond, Stirling.

Nos. 24, 35, and 38 Hill, The Trustees of the late R. Wylie, of Balthayock, Perth.

Tweeddale Gold Medal, value about £25, *for best Shorthorn Bull, " Extra Stock " eligible to compete.* Annual Free Income from Fund of £500.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, " Muirside Ramsden King."

The Emilio R. Casares, jun., " Junior Memorial Champion Cup," value 50 guineas, *for best Shorthorn Bull in Class 4, calved on or after 1st April of the year preceding the year of the Show, that has passed the tuberculin test.* Given by Messrs J. Baird & Co. (Falkirk), Ltd., Bantaskin, Falkirk.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, " Muirside Ramsden King."

Reserve—No. 24 Hill, The Trustees of the late R. Wylie, of Balthayock, Perth, " Balthayock Grand Butterfly."

Best Shorthorn Bull in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, " Muirside Ramsden King."

Silver Medal *to the Breeder of the winner of above Prize*—given by the Shorthorn Society.

No. 26 Innes, James F., Brawlandknowes, Huntly.

Breeder of best Bull of any age in Classes 1 *to* 4 (" *Extra Stock* " *not eligible to compete*)—The Silver Medal.

No. 26 Innes, James F., Brawlandknowes, Huntly.

CLASS 1. BULL, born before 1st December 1936.—PREMIUMS, £15, £10, £5, and £3.

1st No. 2 Jones, P. Forbes, Dunmore Park, Dunmore, Larbert, " Larbert Tor " (283,834).
2nd No. 5 Robertson, Major William B., Colton, Dunfermline, " Beaufort Field-Marshal " (274,956).
3rd No. 3 Macintyre, Captain A. M., of St Martin's, Conon Bridge, Ross-shire, " Balnakyle Solario " (268,228).

EXTRA STOCK.

The following received an award of £10 :—

No. 7 M'William, R. S., Garguston, Muir of Ord, "Aldsworth Royal Jubilee" (274,418).

CLASS 2. Bull, born on or after 1st December 1936 and before 1st December 1937.—Premiums, £15, £10, £5, and £3.

1st No. 8 Black, H. S., Banchory, Coupar-Angus, "Collynie Matador" (293,325).
2nd No. 10 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, "Aldie Aristocrat" (290,848).
3rd No. 11 Marshall, Albert James, Bridgebank, Stranraer, "Cruggleton Prince Eric" (291,196).
4th No. 9 Lovat, Lord, Beaufort Castle, Beauly, "Beaufort Guest" (290,712).
V No. 12 Marshall, Albert James, Bridgebank, Stranraer, "Cruggleton Clipperman" (291,160).

CLASS 3. BULL, born on or after 1st December 1937 and before 1st April 1938.—Premiums, £12, £8, £4, and £2.

1st No. 19 Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, Perthshire, "Cluny Chancellor Command" (289,478).
2nd No. 16 Jones, P. Forbes, Dunmore Park, Dunmore, Larbert, "Cluny Beau Command."
3rd No. 20 Robertson, Major William B., Colton, Dunfermline, "Scotston Prince Alexander."
4th No. 13 Durno, James, Uppermill, Tarves, Aberdeenshire, "Calrossie Sweepstake" (290,897).
V No. 17 Moubray, Captain R., of Naemoor, Rumbling Bridge, Kinross-shire, "Royal Sentry."
H No. 18 Reid, John N., Cromley Bank, Ellon, Aberdeenshire, "Pittodrie Rangefinder."

CLASS 4. BULL, born on or after 1st April 1938.—Premiums, £10, £6, £4, and £2.

1st No. 26 MacGillivray, Captain J., of Calrossie, Nigg, Ross-shire, "Muirside Ramsden King."
2nd No. 24 Hill, The Trustees of the late R. Wylie, of Balthayock, Perth, "Balthayock Grand Butterfly."
3rd No. 21 Black, H. S., Banchory, Coupar-Angus, "Banchory Monarch."
4th No. 28 Marshall, Albert James, Bridgebank, Stranraer, "Cruggleton Prince Desmond."
V No. 23 Dron, W. D., Crieffvechter, Crieff, "Millhills Ultimatum."
H No. 25 Jones, P. Forbes, Dunmore Park, Dunmore, Larbert, "Larbert Pioneer."
C No. 22 Cameron, R. C., Greenlawdean, Berwickshire, "Greenlaw Wonder."

Best Shorthorn Female in the Show, entered or eligible for entry in Coates's Herd-Book—£20, given by the Shorthorn Society.

No. 30 Durno, James, Uppermill, Tarves, Aberdeenshire, "Secret Poppy" (147,835).

Silver Medal *to the Breeder of the winner of above Prize*—given by the Shorthorn Society.

No. 30 Durno, James, Uppermill, Tarves, Aberdeenshire.

CLASS 5. COW, in Milk, born before 1st December 1935.—PREMIUMS, £12, £8, £4, and £2.

1st No. 30 Durno, James, Uppermill, Tarves, Aberdeenshire, "Secret Poppy" (147,835).
2nd No. 31 Durno, James, Uppermill, Tarves, Aberdeenshire, "Beaufort Princess Royal 25th" (159,848).
3rd No. 33 Smith, R. Laidlaw, Pittodrie, Pitcaple, Aberdeenshire, "Pittodrie Patricia" (172,492).
4th No. 29 Crawford and Balcarres, The Earl of, K.T., Balcarres House, Colinsburgh, Fife, "Balcarres Edna" (166,410).
V No. 32 Graham, J. Maxtone, Redgorton, Perth, "Redgorton Buttercup 3rd" (177,751).
H No. 34 Snadden, W. M'Nair, M.P., of The Coldoch, Blair Drummond, by Stirling, "Coldoch Buttercup" (182,481).

CLASS 6. COW, in Milk, born on or after 1st December 1935 and before 1st December 1936.—PREMIUMS, £10, £5, £3, and £2.

1st No. 35 Hill, The Trustees of the late R. Wylie, of Balthayock, Perth, "Balthayock Butterfly 12th" (188,261).

CLASS 7. COW or HEIFER, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st No. 39 Smith, R. Laidlaw, Pittodrie, Pitcaple, Aberdeenshire, Heifer, "Pittodrie Thora" (202,710).
2nd No. 38 Hill, The Trustees of the late R. Wylie, of Balthayock, Perth, Heifer, "Balthayock Butterfly 14th" (198,545).
3rd No. 37 Gordon, Mrs B. Hood Linzee, Cluny Castle, Sauchen, Aberdeenshire, Heifer, "Cluny Augusta 56th" (197,902).
4th No. 36 Gordon, Trustees of the late A. P., Bindal, Portmahomack, Ross-shire, Heifer, "Balmuchy Goldie 5th" (197,896).

CLASS 8. HEIFER, born on or after 1st December 1937 and before 1st April 1938.—PREMIUMS, £10, £5, £3, and £2.

1st No. 48 Snadden, W. M'Nair, M.P., of The Coldoch, Blair Drummond, by Stirling, "Coldoch Bonny Rothes."
2nd No. 43 Lovat, Lord, Beaufort Castle, Beauly, "Beaufort Royal Princess 12th."

3rd	No. 42	Gordon, Trustees of the late A. P., Bindal, Portmahomack, Ross-shire, " Balmuchy Butterfly 13th."
4th	No. 49	Stewart, Duncan M'Callum, of Millhills, Crieff, " Inschfield Uitra Cavell."
V	No. 46	Robertson, Major William B., Colton, Dunfermline, " Scotston Jealous Joan."
H	No. 45	Reid, John N., Cromleybank, Ellon, Aberdeenshire, " Clipper Jewel 5th " (201,911).
C	No. 41	Crawford and Balcarres, The Earl of, K.T., Balcarres House, Colinsburgh, Fife, " Balcarres Constance " (196,554).

CLASS 9. HEIFER, born on or after 1st April 1938.— PREMIUMS, £10, £5, £3, and £2.

1st	No. 52	Gordon, Mrs B. Hood Linzee, Cluny Castle, Sauchen, Aberdeenshire, " Cluny Pauline 54th."
2nd	No. 53	MacGillivray, Finlay, of Aldie, Tain, Ross-shire, " Aldie Enid Broadhooks."
3rd	No. 50	Durno, James, Uppermill, Tarves, Aberdeenshire, " Fairy Pride."
4th	No. 51	Gordon, Mrs B. Hood Linzee, Cluny Castle, Sauchen, Aberdeenshire, " Cluny Augusta 61st."
V	No. 55	Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, " Stonelands Orange Girl 3rd."
H	No. 54	MacGillivray, Finlay, of Aldie, Tain, Ross-shire, " Aldie Connie Undine."
C	No. 56	Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, " Strathallan Lady Rosewood."
C	No. 57	Stewart, Duncan M'Callum, of Millhills, Crieff, " Fair Clipper 19th."

ABERDEEN-ANGUS.

PRESIDENT'S CHAMPION MEDAL
for best Aberdeen-Angus Animal.

No. 113 Goodson, Captain A. L., Kilham, Mindrum, Northumberland, " Eulima 6th of Kilham " (102,652).

Reserve—No. 106 Beddie, J. & A., Banks, Strichen, " Gammer Ebenil " (104,726).

Paisley Perpetual Gold Challenge Cup, value £300, *for best animal in the Aberdeen-Angus Classes, "Extra Stock" eligible to compete.* This Cup, along with an endowment of £600, was provided from money collected in Paisley by the late Provost Muir M'Kean, and is in commemoration of the Society's first Show at Paisley in 1913.

No. 113 Goodson, Captain A. L., Kilham, Mindrum, Northumberland, " Eulima 6th of Kilham " (102,652).

Reserve—No. 106 Beddie, J. & A., Banks, Strichen, " Gammer Ebenil " (104,726).

Champion Gold Medal, value £10, *for best Animal in the Breeding Classes, breeding animals shown as " Extra Stock " eligible to compete.* Given by the Aberdeen-Angus Cattle Society.

No. 113 Goodson, Captain A. L., Kilham, Mindrum, Northumberland, " Eulima 6th of Kilham " (102,652).

Silver Cup, value £50, *for best Group of Aberdeen-Angus Cattle, consisting of one Bull and two Females, " Extra Stock " not eligible to compete.* Given by Mr J. E. Kerr of Harviestoun, Dollar.

Nos. 67, 111, and 122 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh.

Silver Cup, value 50 guineas, *for best Aberdeen-Angus Bull born on or after 1st December* 1936. Given by Senor Eduardo Estanguet, Argentina.

No. 99 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Eiradakin of Dalmeny " (104,106).

Breeder of best Bull of any age in Classes 10 *to* 13 (" *Extra Stock " not eligible to compete*)—The Silver Medal.

No. 67 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh.

Ballindalloch Challenge Cup, value £50, *for the best Bull of any age in Classes* 10 *to* 13. Presented by the late Sir George Macpherson Grant, Bt.

No. 67 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh, " Bemaster of Dalmeny " (89,935).

Exhibitor of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

No. 67 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh.

Breeder (if not also the Exhibitor) of the Winner of the Ballindalloch Challenge Cup—The Silver Medal.

Not awarded.

CLASS 10. BULL, born before 1st December 1936.—
PREMIUMS, £15, £10, £5, and £3.

1st No. 67 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh, " Bemaster of Dalmeny " (89,935).
2nd No. 62 Marshall & Mitchell, Bleaton, Blairgowrie, " Rosario of Ballindalloch " (96,748).
3rd No. 66 Robertson, Peter D., Castlecraig, Nigg, Ross-shire, " Eminent of Logie " (90,894).
4th No. 65 Reid, Andrew T., Auchterarder House, Auchterarder, " Eurotus of Auchterarder " (91,180).

V No. 61 Grassick, William R., Millhills, Tullynessle, Alford, Aberdeenshire, " Pathfinder of Millhills " (88,722).
H No. 60 Elgin, The Earl of, K.T., C.M.G., Broomhall, Dunfermline, " Epigram of Broomhall " (94,629).
C No. 59 Donald, William, Gaidrew, Drymen, " Ethiope of Lethen " (94,808).
C No. 63 Paterson, David, Holehouse, Hollybush, Ayr, " Pompey of Dunira " (92,635).
C No. 64 Ramsden, J. W., Hareby House, Spilsby, Lincs., " Ebon of Tillyrie " (90,605).

EXTRA STOCK.

The following received an award of £10 :—

No. 68 Reid, R. M., Tillyrie, Milnathort, " Edmonton of Bleaton " (90,678).

CLASS 11. BULL, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £15, £10, £5, and £3.

1st No. 69 Allendale, Viscount, Bywell, Stocksfield-on-Tyne, " Elbonzo of Addinston " (99,362).
2nd No. 75 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Rodes of Douneside " (99,232).
3rd No. 70 Cox, J. Ernest, Methven Castle, Methven, Perthshire, " Black Friar of Methven " (97,825).
4th No. 73 Hastilow, G. R., Achnagonaln, Grantown-on-Spey, " Prince of Meta " (98,998).
V No. 71 Grant, Sir Robert M., Bt., Logie Home Farm, Dunphail, Forres, " Prince of Muda " (98,999).
H No. 76 Vint, Wyndham T., Terrys, Ormside, Appleby, Westmorland, " Etheric of Tillyrie " (100,059).
C No. 72 Hamilton, William, Tullochgribban, Grantown-on-Spey, " El Campeador of Dupplin " (98,320).
C No. 74 Hope, David S., Powgavie, Inchture, Perthshire, " Jungle Eric " (98,997).

CLASS 12. BULL, born on or after 1st December 1937 and before 1st March 1938.—PREMIUMS, £12, £8, £4, and £2.

1st No. 84 Russell, G. H., of The Burn, Glenesk, Brechin, " Predominate " (104,530).
2nd No. 77 Allendale, Viscount, Bywell, Stocksfield-on-Tyne, " Justice of Bywell " (101,012).
3rd No. 82 Petrie, J. & D. M'G., Asleid, New Deer, Aberdeenshire, " Joyero " (103,849).
4th No. 80 Cunningham-Jardine, Mrs D. A. J., of Jardine, Lockerbie, " Royal Pretender of Jardine " (101,730).
V No. 87 Todd, Thomas W., Manorhill, Kelso, " Prince Sureven " (104,535).
H No. 79 Booth, J. D., Dens, Peterhead, " Prospero of Struthers " (104,340).
C No. 85 Strathmore Estates, Estates Office, Glamis, " Aneric of Bleaton " (103,355).
C No. 86 Templeton, T. & M., Sandyknowe, Kelso, " Ethlet of Nisbethill " (101,980).

CLASS 13. BULL, born on or after 1st March 1938.— PREMIUMS, £10, £6, £4, and £2.

1st No. 99 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Eiradakin of Dalmeny " (104,106).
2nd No. 88 Allendale, Viscount, Bywell, Stocksfield-on-Tyne, " Black Major of Bywell " (101,004).
3rd No. 98 Macbeth, W. Gilchrist, of Dunira, Comrie, " Berman of Dunira " (103,042).
4th No. 89 Atkinson, Captain F. B., Gallowhill, Morpeth, Northumberland, " Eulimon of Kilham " (102,302).
V No. 105 Webb, Edward, & Sons, Ltd., Harcarse, Duns, Berwickshire, " Jasper of Harcarse " (104,760).
H No. 100 Marshall & Mitchell, Bleaton, Blairgowrie, " Elendale of Bleaton " (103,362).
C No. 91 Cunningham-Jardine, Mrs D. A. J., of Jardine, Lockerbie, " Jolly of Ballindalloch " (102,411).
C No. 92 Donald, William, Gaidrew, Drymen, " Baron Bruce of Gaidrew " (101,785).
C No. 97 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, " Eldoravo of Doonholm " (102,867).

Harviestoun Challenge Cup, value £50, *for the best Cow of any age in Classes* 14 *to* 16. Presented by Mr J. E. Kerr of Harviestoun, Dollar.

No. 106 Beddie, J. & A., Banks, Strichen, " Gammer Ebenil " (104,726).

Exhibitor of the Winner of the Harviestoun Challenge Cup—The Silver Medal.

No. 106 Beddie, J. & A., Banks, Strichen.

Breeder (if not also the Exhibitor) of the Winner of the Harviestoun Challenge Cup—The Silver Medal.

No. 106 Beddie, James, Banks, Strichen.

Silver Cup, value £50, *for the best Female Animal of the Aberdeen-Angus breed. " Extra Stock " eligible to compete.* Presented by Mr Falconer L. Wallace of Candacraig, Strathdon.

No. 113 Goodson, Captain A. L., Kilham, Mindrum, Northumberland, " Eulima 6th of Kilham " (102,652).

CLASS 14. COW, in Milk, born before 1st December 1935.— PREMIUMS, £12, £8, £4, and £2.

1st No. 106 Beddie, J. & A., Banks, Strichen, " Gammer Ebenil " (104,726).
2nd No. 111 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh, " Berette Maid of Ballindalloch " (102,715).
3rd No. 109 Marshall & Mitchell, Bleaton, Blairgowrie, " Estudiana of Bleaton " (109,597).

4th No. 110 Reid, R. M., Tillyrie, Milnathort, "Evening Thimble of Tillyrie" (94,710).
V No. 112 Vint, Wyndham T., Terrys, Ormside, Appleby, Westmorland, "Benze of Nisbethill" (96,363).
H No. 108 Jenkins, Mrs A. M., Mount Annan, Annan, Dumfriesshire, "Lilian of Pitskelly" (106,818).
C No. 107 Ivory, Basil G., of Binny, Uphall, West Lothian, "Geneva of Bywell" (107,731).

EXTRA STOCK.

The following received an award of £10 :—

No. 113 Goodson, Captain A. L., Kilham, Mindrum, Northumberland, "Eulima 6th of Kilham" (102,652).

CLASS 15. COW, in Milk, born on or after 1st December 1935 and before 1st December 1936.—PREMIUMS, £12, £8, £4, and £2.

1st No. 123 Russell, G. H., of The Burn, Glenesk, Brechin, "Broma of The Burn" (113,585).
2nd No. 118 Grant, Sir Robert M., Bt., Logie Home Farm, Dunphail, Forres, "Bellona of Logie" (112,150).
3rd No. 122 Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh, "Gita of Borgie" (113,126).
4th No. 117 Forteviot, Lord, of Dupplin, Dupplin Castle, Perthshire, "Rosa 4th of Ballintomb" (110,954).
V No. 121 Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Margaux of Doonholm" (112,501).
H No. 119 Ivory, Basil G., of Binny, Uphall, West Lothian, "Pure Pride of Ballintomb 7th" (110,953).
C No. 114 Atkinson, Captain F. B., Gallowhill, Morpeth, Northumberland, "Bangle of Gallowhill" (111,021).
C No. 115 Beddie, J. & A., Banks, Strichen, "Gammer Eviana" (111,076).
C No. 116 Elgin, The Earl of, K.T., C.M.G., Broomhall, Dunfermline, "Black Sadie of Broomhall" (111,754).

CLASS 16. COW or HEIFER, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st No. 131 Reid, Andrew T., Auchterarder House, Auchterarder, Heifer, "Kindella of Auchterarder" (116,889).
2nd No. 129 Kerr, J. E., of Harviestoun, Dollar, Heifer, "Erska of Harviestoun" (115,964).
3rd No. 128 Ivory, Basil G., of Binny, Uphall, West Lothian, Cow, "Barmaid of Garvault" (115,551).
4th No. 124 Beddie, J. & A., Banks, Strichen, Heifer, "Gammer Ebleta" (114,433).
V No. 127 Hamilton, William, Tullochgribban, Grantown-on-Spey, Heifer, "Eileen of Balnain" (115,529).
H No. 134 Russell, G. H., of The Burn, Glenesk, Brechin, Heifer, "Evalida" (116,768).
C No. 135 Templeton, T. & M., Sandyknowe, Kelso, Heifer, "Eglatta of Sandyknowe" (117,403).
C No. 130 Macbeth, W. Gilchrist, of Dunira, Comrie, Heifer, "Godiva of Auchterarder" (116,887).
C No. 125 Elgin, The Earl of, K.T., C.M.G., Broomhall, Dunfermline, Heifer, "Ervabell of Broomhall" (115,115).
C No. 136 Templeton, T. & M., Sandyknowe, Kelso, Heifer, "Electra of Sandyknowe" (117,404).

CLASS 17. HEIFER, born on or after 1st December 1937 and before 1st March 1938.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 142	Kerr, J. E., of Harviestoun, Dollar, "Erinia of Harviestoun" (119,488).
2nd	No. 140	Hunter, J. G., Horn, Errol, "Etarre 22nd of Horn" (119,358).
3rd	No. 143	Macbeth, W. Gilchrist, of Dunira, Comrie, "Butiaba of The Burn" (120,604).
4th	No. 147	Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh, "Evawilla of Dalmeny" (120,569).
V	No. 146	Reid, Andrew T., Auchterarder House, Auchterarder, "Elswithe of The Laws" (120,622).
H	No. 144	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Ergastrice of Bleaton" (119,970).
C	No. 138	Cox, J. Ernest, Methven Castle, Methven, Perthshire, "Essolene of Methven" (118,392).

CLASS 18. HEIFER, born on or after 1st March 1938.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 151	Grant, Sir Robert M., Bt., Logie Home Farm, Dunphail, Forres, "Rosie Roseta" (117,853).
2nd	No. 155	Macbeth, W. Gilchrist, of Dunira, Comrie, "Pride 15th of Dunira" (119,650).
3rd	No. 153	Jenkins, Mrs A. M., Mount Annan, Annan, Dumfriesshire, "Braw Maid 4th of Damside" (117,884).
4th	No. 156	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Bessie Bremmer" (117,838).
V	No. 154	Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, "Prunella of Doonholm" (119,484).
H	No. 160	Russell, G. H., of The Burn, Glenesk, Brechin, "Wilga Beauty of The Burn" (120,611).
C	No. 157	Reid, Andrew T., Auchterarder House, Auchterarder, "Eulima of Auchterarder" (120,479).
C	No. 162	Templeton, T. & M., Sandyknowe, Kelso, "Wild Witch of Sandyknowe" (120,997).

GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for best Galloway Animal.

No. 174 M'Kill, William, Mitchellhill, Broughton, by Biggar, Peeblesshire, "Keynote 2nd of Tundergarth Mains" (21,626).

Reserve—No. 170 Carlyle, Thomas, Milnholm, Langholm, Dumfriesshire, "Milnholm Rustler" (21,297).

Dr Gillespie Memorial Challenge Trophy, value £50, *for best Galloway Animal in the Breeding Classes, breeding animals shown as "Extra Stock" eligible to compete.* Presented by the Galloway Cattle Society of Great Britain and Ireland.

No. 174 M'Kill, William, Mitchellhill, Broughton, by Biggar, Peeblesshire, "Keynote 2nd of Tundergarth Mains" (21,626).

Silver Challenge Cup, value £50, *for best animal of the sex opposite to that of the winner of the Dr Gillespie Memorial Challenge Trophy, "Extra Stock" eligible to compete.* Presented by the Galloway Cattle Society to commemorate the Hundredth Show.

No. 200 Graham, C. E., Bogrie, Canonbie, "Glenzier Genevieve 7th" (39,762).

Breeder of best Bull of any age in Classes 19 *to* 21 (*" Extra Stock " not eligible to compete*)—The Silver Medal.

No. 174 Wilson, Peter, Tundergarth Mains, Lockerbie.

CLASS 19. BULL, born before 1st December 1936.—PREMIUMS, £15, £10, £5, and £3.

1st No. 163 Duncan, W. & A. B., Newlands, Dumfries, "Barmark Grenadier" (20,471).
2nd No. 165 Paterson, Robert Jardine, Balgray, Lockerbie, "Milnholm Freeman" (18,909).

CLASS 20. BULL, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £15, £10, £5, and £3.

1st No. 167 Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Minsca Mosstrooper" (20,865).
2nd No. 168 Graham, Robert, Chapel of Logan, Canonbie, "Grenadier" (20,978).

CLASS 21. BULL, born on or after 1st December 1937.—PREMIUMS, £12, £8, £4, and £2.

1st No. 174 M'Kill, William, Mitchellhill, Broughton, by Biggar, Peeblesshire, "Keynote 2nd of Tundergarth Mains" (21,626).
2nd No. 170 Carlyle, Thomas, Milnholm, Langholm, Dumfriesshire, "Milnholm Rustler" (21,297).
3rd No. 169 Anderson, James Scott, Tullichewan, Alexandria, Dumbartonshire, "Herald of Tullichewan" (21,597).
4th No. 171 Duncan, W. & A. B., Newlands, Dumfries, "Emperor of Auchencairn" (21,272).
C No. 173 Kennedy-Moffat, W., Auchencheyne, Moniaive, Dumfriesshire, "Hitler of Lochurr" (21,459).

CLASS 22. COW, in Milk, born before 1st December 1936.—PREMIUMS, £12, £8, £4, and £2.

1st No. 176 Buccleuch Estates, Ltd., Drumlanrig, Thornhill, Dumfriesshire, "Moorhen of Drumlanrig" (37,872).
2nd No. 178 Carruthers, Lieut.-Colonel F. J., of Dormont, Lockerbie, "Nettie of Dormont" (34,205).
3rd No. 175 Anderson, James Scott, Tullichewan, Alexandria, Dumbartonshire, "Marchioness of Tullichewan" (34,774).

4th	No. 179	Graham, C. E., Bogrie, Canonbie, "Glenzier Genevieve 2nd" (33,685).
V	No. 177	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Dora of Castle Milk" (33,008).
H	No. 180	Graham, Robert, Chapel of Logan, Canonbie, "Logan Lady 44th" (37,309).
C	No. 181	Paterson, Robert Jardine, Balgray, Lockerbie, "Pomegranate 3rd of Balgray" (33,749).

CLASS 23. COW or HEIFER, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 185	Carruthers, Lieut.-Colonel F. J., of Dormont, Lockerbie, Heifer, "Nell 2nd of Dormont" (38,780).
2nd	No. 187	Graham, Robert, Chapel of Logan, Canonbie, Heifer, "Logan Lady 51st" (38,993).
3rd	No. 186	Graham, Robert, Chapel of Logan, Canonbie, Heifer, "Logan Lady 52nd" (38,992).
4th	No. 184	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, Heifer, "Bell of Castle Milk" (39,047).
V	No. 188	Kennedy-Moffat, W., Auchencheyne, Moniaive, Dumfriesshire, Heifer, "Gloria of Lochurr" (39,056).
H	No. 190	Paterson, Robert Jardine, Balgray, Lockerbie, Heifer, "Marina of Balgray" (39,427).
C	No. 191	Paterson, Robert Jardine, Balgray, Lockerbie, Heifer, "Minerva of Balgray" (39,432).
C	No. 189	Kennedy-Moffat, W., Auchencheyne, Moniaive, Dumfriesshire, Heifer, "Titian of Lochurr" (39,062).

CLASS 24. HEIFER, born on or after 1st December 1937 and before 1st March 1938.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 200	Graham, C. E., Bogrie, Canonbie, "Glenzier Genevieve 7th" (39,762).
2nd	No. 197	Duncan, W. & A. B., Newlands, Dumfries, "Rosebud 3rd of Gilchristland" (39,618).
3rd	No. 199	Duncan, W. & A. B., Newlands, Dumfries, "Elsie 5th of Gilchristland" (39,627).
4th	No. 194	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Baroness 2nd of Castle Milk" (39,815).
V	No. 193	Buccleuch Estates, Ltd., Drumlanrig, Thornhill, Dumfriesshire, "Sabrina of Drumlanrig" (39,501).
H	No. 198	Duncan, W. & A. B., Newlands, Dumfries, "Rusty of Gilchristland" (39,623).
C	No. 192	Anderson, James Scott, Tullichewan, Alexandria, Dumbartonshire, "Agnes 2nd of Tullichewan" (40,105).
C	No. 195	Carruthers, Lieut.-Colonel F. J., of Dormont, Lockerbie, "Lily of Dormont" (39,540).

CLASS 25. HEIFER, born on or after 1st March 1938.—
PREMIUMS, £10, £5, £3, and £2.

1st No. 203 Carlyle, Thomas, Milnholm, Langholm, Dumfriesshire, "Milnholm Monica 4th" (39,528).
2nd No. 204 Carlyle, Thomas, Milnholm, Langholm, Dumfriesshire, "Milnholm Peggy 6th" (39,531).
3rd No. 205 Duncan, W. & A. B., Newlands, Dumfries, "Eventide of Gilchristland" (39,628).
4th No. 206 Graham, Robert, Chapel of Logan, Canonbie, "May Queen 14th of Logan" (39,772).
C No. 202 Anderson, James Scott, Tullichewan, Alexandria, Dumbartonshire, "Roma 4th of Tullichewan" (40,108).

BELTED GALLOWAY.

PRESIDENT'S CHAMPION MEDAL for best Belted Galloway Animal.

No. 213 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Mark Advocate" (1085 B).

Reserve—No. 219 Graham, Andrew, Auchengassel, Twynholm, Cow, "Mark Doris" (3570 B).

Knockbrex Challenge Cup, value £50, *for the best Belted Galloway Animal, "Extra Stock" eligible to compete.* This Cup was presented by Mrs Brown, Kirkbrex, Glasgow, for the best Belted Galloway Animal registered in the Dun and Belted Galloway Cattle Breeders' Association Herd-Book, entered in any of the breeding classes, at the Show at which it may be competed for.

No. 213 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Mark Advocate" (1085 B).

The Ian Hamilton Silver Challenge Cup, value £50, *for the best Belted Galloway Animal of the sex opposite to that of the winner of the Knockbrex Challenge Cup, "Extra Stock" eligible to compete.* The winning animal to be registered or eligible for registration in the Dun and Belted Galloway Herd-Book. This Cup was presented by General Sir Ian Hamilton, G.C.B.

No. 219 Graham, Andrew, Auchengassel, Twynholm, Cow, "Mark Doris" (3570 B).

Breeder of Best Bull in Classes 26 *and* 27 (*"Extra Stock" not eligible to compete*)—The Silver Medal.

No. 211 Sproat, J. Faed, Boreland of Anwoth, Gatehouse, Galloway.

CLASS 26. BULL, born before 1st December 1937.— PREMIUMS, £10, £5, £3, and £2.

1st No. 211 Sproat, J. Faed, Boreland of Anwoth, Gatehouse, Galloway, "Boreland Gift" (1011 B).

2nd No. 212 Stuart, Lord David, Craigeach, Kirkcowan, Wigtownshire, "Mochrum True Blue of Craigeach" (1161 B).

3rd No. 210 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Mochrum Pioneer of Craigeach" (1037 B).

4th No. 208 Graham, Andrew, Auchengassel, Twynholm, "Mark Dan" (1155 B).

V No. 209 Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Gartmore Noel" (1147 B).

EXTRA STOCK.

The following received an award of £10 :—

No. 213 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Mark Advocate" (1085 B).

CLASS 27. BULL, born on or after 1st December 1937.— PREMIUMS, £10, £5, £3, and £2.

1st No. 216 Graham, Andrew, Auchengassel, Twynholm, "Mark Factor" (1243 B).

2nd No. 218 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Bernard II." (1223 B).

3rd No. 217 Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Lullenden Viking" (1229 B).

4th No. 214 Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, "Scatwell Jack" (1235 B).

V No. 215 Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, "Scatwell Joe" (1239 B).

CLASS 28. COW or HEIFER, born before 1st December 1936, in Milk or in Calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show.—PREMIUMS, £10, £5, £3, and £2.

1st No. 219 Graham, Andrew, Auchengassel, Twynholm, Cow, "Mark Doris" (3570 B).

2nd No. 220 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, Cow, "Gartmore Dandy VII." (3450 B).

EXTRA STOCK.

The following received an award of £10 :—

No. 221 Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, Cow, "Gartmore Christian III." (3220 B).

CLASS 29. HEIFER, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 226	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Christian VII." (3740 B).
2nd	No. 227	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Dandy X." (3744 B).
3rd	No. 223	Graham, Andrew, Auchengassel, Twynholm, "Mark Connie" (3976 B).
4th	No. 228	Stuart, Lord David, Craigeach, Kirkcowan, Wigtownshire, "Mochrum Confidence II. of Craigeach" (3812 B).
V	No. 224	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Gartmore Helen IV." (3750 B).
H	No. 222	Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, "Scatwell Flora" (3780 B).

CLASS 30. HEIFER, born on or after 1st December 1937.— PREMIUMS, £10, £5, £3, and £2.

1st	No. 232	Graham, Andrew, Auchengassel, Twynholm, "Mark Doreen" (3978 B).
2nd	No. 231	Graham, Andrew, Auchengassel, Twynholm, "Mark Peg" (3980 B).
3rd	No. 235	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Dandy XII." (3932 B).
4th	No. 234	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Lullenden Mary" (3944 B).
V	No. 233	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Lullenden Rosebud I." (3948 B).
H	No. 230	Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, "Scatwell June" (3974 B).

HIGHLAND.

PRESIDENT'S CHAMPION MEDAL for best Highland Animal.

No. 243 Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay, "Fear Diona Ile" (4023).

Reserve—No. 269 Dunlop, Miss, of Shieldhill, Biggar, "Maireared III. of Quothquan" (11,338).

Perpetual Victory Challenge Cup, approximate value 50 guineas, *for the best Animal in the Male Classes, "Extra Stock" eligible to compete.* Given by the Highland Cattle Society of Scotland.

No. 243 Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay, "Fear Diona Ile" (4023).

Breeder of best Bull in Classes 31 *to* 33 (*" Extra Stock " not eligible to compete*) —The Silver Medal.

No. 243 Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay.

CLASS 31. BULL, born before 1st December 1936.— PREMIUMS, £15, £10, £5, and £3.

1st No. 236 Ivory, Basil G., of Binny, Uphall, West Lothian, " An Fear Molach of Killundine " (3928).

CLASS 32. BULL, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £15, £10, £5, and £3.

1st No. 238 Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, " Coinneach Ruadh of Barbreck " (3962).
2nd No. 239 Walker, Francis W., of Leys, Leys Castle, Inverness-shire, " Seumas of Leys " (4005).

CLASS 33. BULL, born on or after 1st December 1937.— PREMIUMS, £12, £8, £4, and £2.

1st No. 243 Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay, " Fear Diona Ile " (4023).
2nd No. 244 Walker, Francis W., of Leys, Leys Castle, Inverness-shire, " Jock IV. of Leys " (4051).
3rd No. 241 Mansfield Estates, Balboughty, Perth, " Merlin VII. of Southesk " (4048).
4th No. 242 Marshall & Mitchell, Craighead of Bamff, Alyth, Perthshire, " Angus Ruadh of Bamff " (4042).
V No. 240 Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, " Cardair of Barbreck " (4017).

Perpetual Victory Challenge Cup, approximate value 35 guineas, *for the best Animal in the Female Classes, " Extra Stock " eligible to compete.* Given by the Highland Cattle Society of Scotland.

No. 269 Dunlop, Miss, of Shieldhill, Biggar, " Maireared III. of Quothquan " (11,338).

CLASS 34. COW, of any age, with Calf at foot.— PREMIUMS, £12, £8, £4, and £2.

1st No. 247 Dunlop, Miss, of Shieldhill, Biggar, " Laochag III. of Quothquan " (10,907).
2nd No. 246 Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, " Capleadh XV. of Achnacloich " (10,717).
3rd No. 249 Marshall & Mitchell, Craighead of Bamff, Alyth, Perthshire, " Usgar of Killundine " (11,028).
4th No. 250 Thomson, Misses S. W. & B. L., of Glenpark, Balerno, Midlothian, " Cairn of Glendarroch " (10,923).
V No. 248 Mansfield Estates, Balboughty, Perth, " Lady Sheila III." (11,111).
H No. 251 Walker, Francis W., of Leys, Leys Castle, Inverness-shire, " Mairi of Leys " (10,795).
C No. 245 Currie, John J., Cuilfail, Kilmelford, by Oban, " Riabhach Mhollach III. of Milton " (10,766).

EXTRA STOCK.

The following received an award of £10 :—

No. 252 Walker, William, of Foreland, Bruichladdich, Isle of Islay, " Laochag Chliniteach " (11,072).

CLASS 35. HEIFER, born on or after 1st December 1935 and before 1st December 1936.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 256	Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay, " Capleadh Ile " (11,127).
2nd	No. 253	Brown, William Pearson, Market Street, Easingwold, Yorks., " Forest of Galtres Princess " (11,067).
3rd	No. 254	Brown, William Pearson, Market Street, Easingwold, Yorks., " Leegie Buidhe of Barbreck " (11,151).
4th	No. 255	Currie, John J., Cuilfail, Kilmelford, by Oban, " Laochag Riabhach II. of Cuilfail " (11,186).

CLASS 36. HEIFER, born on or after 1st December 1936 and before 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 265	Walker, William, of Foreland, Bruichladdich, Isle of Islay, " Una of Foreland " (11,207).
2nd	No. 263	Thomson, Misses S. W. & B. L., of Glenpark, Balerno, Midlothian, " Kaimes of Glendarroch " (11,205).
3rd	No. 262	Morrison, John G., of Islay, Islay House, Bridgend, Isle of Islay, " Capleadh Ile III." (11,204).
4th	No. 258	Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, " Capleadh Ruadh III. of Barbreck " (11,233).
V	No. 259	Dalgleish, Miss Rosemary, Barbreck House, Barbreck, Lochgilphead, Argyll, " Buidheag " (11,234).
H	No. 260	Dunlop, Miss, of Shieldhill, Biggar, " Laochag IV. of Quothquan " (11,200).
C	No. 257	Currie, John J., Cuilfail, Kilmelford, by Oban, " Beitidh of Cuilfail " (11,262).
C	No. 264	Thomson, Misses S. W. & B. L., of Glenpark, Balerno, Midlothian, " Sally of Glendarroch " (11,206).

CLASS 37. HEIFER, born on or after 1st December 1937.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 269	Dunlop, Miss, of Shieldhill, Biggar, " Maireared III. of Quothquan " (11,338).
2nd	No. 273	Walker, William, of Foreland, Bruichladdich, Isle of Islay, " Ceit of Foreland " (11,210).
3rd	No. 272	Walker, William, of Foreland, Bruichladdich, Isle of Islay, " Peigi of Foreland " (11,211).
4th	No. 268	Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, " Morag Ruadh II. of Ardachy " (11,252).
V	No. 266	Brown, William Pearson, Market Street, Easingwold, Yorks., " Bean Bhan Ile V." (11,341).

AYRSHIRE.

CONDITIONS.

1. To be eligible for competition in the Ayrshire Section cows must have an authenticated milk yield, and younger females (including cows which have not completed their first lactation) and bulls an authenticated milking pedigree, of a definite minimum amount.
2. The minimum amount referred to shall be as follows, calculated on the basis of a period between calvings of 52 weeks, and 3.8 per cent of butter fat:—
   - (*a*) Cows which have completed two or more lactations—700 gallons.
   - (*b*) Cows which have completed only one lactation—600 gallons.
   - (*c*) Younger females and bulls — an authenticated milking pedigree for dam and dam of sire on a similar basis.
3. In the case of cows with two or more lactations the record lodged may be that for any year the Exhibitor may select.

PRESIDENT'S CHAMPION MEDAL
for best Ayrshire Animal.

No. 354 Montgomerie, A. W., Westburn Farm, Cambuslang, "Burton Novelty" (36,153).

Reserve—No. 302 Howie, James, & Sons, Muirside, Dumfries, "Howie's Twinkle 4th" (68,199).

Trent Perpetual Challenge Trophy, value £50, *for the best Group of three animals of the Ayrshire breed, consisting of three females in milk or in calf, bred by Exhibitor. "Extra Stock" eligible to compete.* Presented by Messrs Boots Pure Drug Company, Ltd.

Nos. 274, 298, and 308 Clark, John, Dunrod Farm, Inverkip.

Cowhill Champion Cup, approximate value £30, *for best Animal of the Ayrshire breed, entered with a number in the Herd-Book.* Presented by the late Major Henry Keswick, Cowhill Tower, Dumfries, to the Ayrshire Cattle Herd-Book Society, to be competed for annually at the Shows of the Highland and Agricultural Society of Scotland. Messrs James Howie & Sons, Muirside, Dumfries, who won this Cup outright in 1934, have kindly re-presented the Cup to the Society for competition on the same conditions as formerly.

No. 354 Montgomerie, A. W., Westburn Farm, Cambuslang, "Burton Novelty" (36,153).

Special Prize of £10 *for the best Female Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book prior to 1st June* 1939. *"Extra Stock" eligible to compete.* Given by the Ayrshire Cattle Herd-Book Society.

No. 302 Howie, James, & Sons, Muirside, Dumfries, "Howie's Twinkle 4th" (68,199).

CLASS 38. COW, in Milk, born before 1936.—PREMIUMS, £15, £10, £5, and £3.

1st	No. 302	Howie, James, & Sons, Muirside, Dumfries, "Howie's Twinkle 4th" (68,199).
2nd	No. 281	Templeton, Jacob, Rottenrow, Mauchline, "Rottenrow Greta 2nd" (62,677).
3rd	No. 279	M'Alister, Duncan, Nether Ardroscadale, Rothesay, "Ardroscadale Cinderella 7th" (73,492).
4th	No. 274	Clark, John, Dunrod Farm, Inverkip, "Dunrod Susan 6th" (65,062).
V	No. 285	Turner, James, Loaninghead, Balfron Station, Stirlingshire, "Loaninghead Lady Ray" (83,079).
H	No. 283	Turner, James, Loaninghead, Balfron Station, Stirlingshire, "Loaninghead Bluebell" (83,072).

CLASS 39. COW, in Milk, born on or after 1st January 1936.—PREMIUMS, £15, £10, £5, and £3.

1st	No. 288	Garven, James, Tandlehill, Beith, "Tandlehill Heather Honey" (76,829).
2nd	No. 289	Howie, James, Eglinton Mains, Irvine, "Mains Bright Lady 2nd" (89,903).
3rd	No. 291	Montgomerie, A. W., Westburn Farm, Cambuslang, "Lessnessock Spicy Girl" (81,324).
4th	No. 297	Turner, James, Loaninghead, Balfron Station, Stirlingshire, "Loaninghead Wallflower 2nd" (83,089).
V	No. 286	Ardgowan Estates, Ltd., Ardgowan, Inverkip, "Ardgowan Constance" (82,150).

CLASS 40. COW, of any age, in Calf, and due to calve before 1st December of the year of the Show.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 280	Mackay, Robert, Bruchag, Rothesay, "Bruchag Velvet" (53,802).
2nd	No. 301	Greenshields, Trevor, Over-the-Hill, Houghton-le-Spring, "Redhills Ella Bright" (61,652).
3rd	No. 300	Dunlop, Robert, Chapelhill, Castle Douglas, "Chapelhill Snowflake" (66,010).
4th	No. 298	Clark, John, Dunrod Farm, Inverkip, "Dunrod Pearl 11th" (48,169).
V	No. 303	Lawrie, Arthur, Kessington, Bearsden, "Kirkcudbright Marjory 12th" (53,612).
H	No. 305	Semple, Robert, Netherton, Dalrymple, Ayr, "Netherton Lovely Maid 2nd" (59,758).

CLASS 41. HEIFER, born on or after 1st June 1936, in Calf and due to calve before 1st December of the year of the Show.—PREMIUMS, £10, £6, £4, and £2.

1st	No. 308	Clark, John, Dunrod Farm, Inverkip, "Dunrod Lass 10th" (84,487).
2nd	No. 309	Dalziel, Robert, Rue, Holywood, Auldgirth, Dumfriesshire, "Rue Daphne" (85,873).
3rd	No. 318	Semple, Robert, Netherton, Dalrymple, Ayr, "Netherton Princess Margaret Rose" (85,720).
4th	No. 311	Howie, John, Hillhouse, Kilmarnock, "Hillhouse Dora 4th" (82,031).

V No. 310 Howie, James, & Sons, Muirside, Dumfries, "Howie's Iris 5th" (89,746).
H No. 296 Turner, James, Loaninghead, Balfron Station, Stirlingshire, "Loaninghead Vera 2nd" (83,086).
C No. 316 Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, "Strathallan Sweet Reply" (84,369).
C No. 320 Templeton, George, Carnell Home Farm, Hurlford, Kilmarnock, "Carnell Norah 4th" (85,798).
C No. 317 Rowallan, Lord, Rowallan, Kilmarnock, "Rowallan Tilda 38th" (84,605).

CLASS 42. HEIFER, born in 1937.—PREMIUMS, £10, £6, £4, and £2.

1st No. 330 Logan, W. & J., Burton Farm, Ayr, "Burton Rita" (80,930).
2nd No. 335 Wallace, David, Auchenbrain, Mauchline, "Auchenbrain Yellow Kate 72nd" (80,709).
3rd No. 326 Ardgowan Estates, Ltd., Ardgowan, Inverkip, "Ardgowan Cresta" (98,589).
4th No. 329 Houldsworth, Colonel W. T. R., Threave, Kirkmichael, Ayrshire, "Threave Circe 3rd" (97,238).
V No. 325 Ardgowan Estates, Ltd., Ardgowan, Inverkip, "Ardgowan Cherryripe" (98,583).
H No. 327 Barbour, Adam H., Auchengibbert, Crocketford, Dumfries, "Auchengibbert Primrose" (209).
C No. 328 Barbour, Adam H., Auchengibbert, Crocketford, Dumfries, "Auchengibbert Netta 3rd" (206).

CLASS 43. HEIFER, born in 1938.—PREMIUMS, £10, £6, £4, and £2.

1st No. 342 Logan, W. & J., Burton Farm, Ayr, "Burton Fancy Queen" (90,488).
2nd No. 345 Montgomerie, A. W., Westburn Farm, Cambuslang, "Lessnessock Lilian 3rd" (90,547).
3rd No. 347 Semple, Robert, Netherton, Dalrymple, Ayr, "Netherton Miranda 6th" (92,206).
4th No. 344 M'Ilwraith, G. A., Stannock, Isle of Whithorn, Newton Stewart, "Stannock Dorette 2nd" (95,348).
V No. 348 Watson, Alexander, Barboigh, Mauchline, "Barboigh Brown Pearl 10th" (91,715).
H No. 338 Ardgowan Estates, Ltd., Ardgowan, Inverkip, "Ardgowan Camilla" (98,580).

Breeder of best Bull of any age in Classes 44 *to* 46 (*"Extra Stock" not eligible to compete*)—The Silver Medal.

No. 354 Logan, W. & J., Burton Farm, Ayr.

Special Prize of £10 *for the best Male Animal of the Ayrshire breed entered with a number in the Ayrshire Cattle Herd-Book prior to 1st June* 1939. *"Extra Stock" eligible to compete.* Given by the Ayrshire Cattle Herd-Book Society.

No. 354 Montgomerie, A. W., Westburn Farm, Cambuslang, "Burton Novelty" (36,153).

CLASS 44. BULL, born before 1937.—PREMIUMS, £12, £8, £4, and £2.

1st No. 354 Montgomerie, A. W., Westburn Farm, Cambuslang, " Burton Novelty " (36,153).
2nd No. 353 M'Ilwraith, G. A., Stannock, Isle of Whithorn, Newton Stewart, " Nether Craig Rantin' Robin " (35,914).
3rd No. 355 Tullibody Land Co., Ltd., Ditch Farm, Cambus, " Tullibody Autocrat " (38,655).
4th No. 352 Howie, James, & Sons, Muirside, Dumfries, " Knockengig Duncan " (39,322).

CLASS 45. BULL, born in 1937.—PREMIUMS, £10, £7, £3, and £2.

1st No. 360 Montgomerie, A. W., Westburn Farm, Cambuslang, " Burton Topsman " (41,566).
2nd No. 359 Howie, James, & Sons, Muirside, Dumfries, " Knowe Golden Grade " (42,012).

CLASS 46. BULL, born in 1938.—PREMIUMS, £8, £5, £3, and £2.

1st No. 361 Montgomerie, A. W., Westburn Farm, Cambuslang, Auchenbrain By-play " (42,053).
2nd No. 362 Templeton, Jacob, Rottenrow, Mauchline, " Hobsland Brown Chief " (41,231).
3rd No. 367 Watson, Alexander, Barboigh, Mauchline, " Auchenbrain Jaska " (42,064).
4th No. 365 Tullibody Land Co., Ltd., Ditch Farm, Cambus, " Knockterra Old Timer " (42,099).
V No. 364 Tennant, James, Hillhouse, Sandilands, Lanark, " Pennyfadzeoch Flash Boy " (40,915).
H No. 366 Wallace, David, Auchenbrain, Mauchline, " Lessnessock Milk Board " (41,717).

BRITISH FRIESIAN.

PRESIDENT'S CHAMPION MEDAL
for best British Friesian Animal.

No. 435 Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington (imported 1936) Leo " (46,237).

Reserve—No. 406 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Douneside Lod Lorna 2nd " (224,446).

Edinburgh Corporation Perpetual Gold Challenge Cup *for best British Friesian Animal. " Extra Stock " eligible to compete.* This Cup was presented by the City of Edinburgh to commemorate the Society's Hundredth Show.

No. 435 Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington (imported 1936) Leo " (46,237).

Reserve—No. 406 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Douneside Lod Lorna 2nd " (224,446).

The MacRobert Champion Silver Bell, value 50 guineas, *for the best Animal in the British Friesian Classes, registered in or eligible for entry in the British Friesian Cattle Society's Herd-Book. "Extra Stock" eligible to compete.* Presented by Lady Rachel Workman MacRobert, Douneside, Tarland.

No. 435 Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington (imported 1936) Leo" (46,237).

Silver Challenge Cup, value 50 guineas, *for the best Group of three animals. "Extra Stock" eligible to compete.* Given by the British Friesian Cattle Society.

Nos. 406, 427, and 439 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshife.

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Female Animal exhibited. "Extra Stock" eligible to compete.*

No. 406 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lod Lorna 2nd" (224,446).

CLASS 47. COW, in Milk, born in or before 1935.—PREMIUMS, £15, £10, £5, and £3.

1st No. 375 Spence, Andrew, & Son, Commieston, Montrose, "Commieston Notch" (198,848).
2nd No. 368 Craig, John, The Green, Linwood, Paisley, "Cart Olena" (198,070).
3rd No. 373 MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Fiona" (177,396 R.M.).
4th No. 372 M'Kendrick, Mrs E., Craigends, Dennistoun, Kilmacolm, Renfrewshire, "Dennistoun Haartje" (188,310 R.M.).
V No. 377 Weightman, Albert, Middle Herrington Farm, Sunderland, "Denton Caroline" (188,332 R.M.).

CLASS 48. COW, in Calf, and not in Milk, born in or before 1936.—PREMIUMS, £12, £8, £4, and £2.

1st No. 385 M'Kendrick, Robert E., Cameron, Windygates, Fife, "Craigends Marina" (187,740).
2nd No. 369 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigiemains Doris" (187,756).
3rd No. 384 M'Kendrick, Mrs E., Craigends, Dennistoun, Kilmacolm, Renfrewshire, "Dennistoun (imported 1936) Marie" (199,658).
4th No. 388 Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Onyx" (190,278 P.I., R.M.).
V No. 381 Kirkpatrick, F. N. & J. M., Loch House, Beattock, Moffat, Dumfriesshire, "Evan Nonnezoshe 3rd" (212,312 R.M.P.).
H No. 380 Johnston, Thomas, & Son, Standalane, Falkirk, "Standalane Wizard Warida" (183,396).
C No. 386 M'Nair, Samuel, Merrymouth Farm, Dunlop, Ayrshire, "Raithhill Ada 2nd" (160,720).
C No. 387 Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Love-in-a-Mist" (157,550).
C No. 383 M'Kendrick, Mrs E., Craigends, Dennistoun, Kilmacolm, Renfrewshire, "Dennistoun Chloe" (166,288).

CLASS 49. COW, in Milk, born in 1936 or 1937.—PREMIUMS, £15, £10, £5, and £3.

1st	No. 397	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Naomi 2nd" (213,796).
2nd	No. 393	M'Kendrick, Mrs E., Craigends, Dennistoun, Kilmacolm, Renfrewshire, "Dennistoun Bontje" (211,622).
3rd	No. 389	Christison, John, Crossveggate, Milngavie, "Crossveggate Mary" (211,268).
4th	No. 398	Weightman, Wesley, Old Burdon Dairy Farm, Seaham, Co. Durham, "Ranby Jill 2nd" (217,414).
V	No. 392	Macaulay, Andrew, Lathalmond Farm, Dunfermline, "Lathalmond Betteen" (214,596).
H	No. 391	Logan, James, Powis Mains, Stirling, "Powis Ermine 2nd" (217,144).
C	No. 396	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Melody 2nd" (213,786).

CLASS 50. HEIFER, born in 1937.—PREMIUMS, £10, £6, £4, and £2.

1st	No. 406	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lod Lorna 2nd" (224,446).
2nd	No. 401	Johnston, Thomas, & Son, Standalane, Falkirk, "Standalane Bert Daisybud" (231,496).
3rd	No. 412	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Gentle Ruth" (226,554).
4th	No. 411	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Rosalind" (226,598 P.I.).
V	No. 404	Logan, James, Powis Mains, Stirling, "Powis Nora-Lin 11th" (230,138).
H	No. 409	Moffitt, John E., Peepy, Stocksfield-on-Tyne, Northumberland, "Dalton Marlette" (224,080).
C	No. 403	Logan, James, Powis Mains, Stirling, "Powis Nora-Lin 19th" (230,136).
C	No. 400	Hall, Ernest B., Hales Hall, Market Drayton, Shropshire, "Hales Thelma 6th" (226,092 P.I.).
C	No. 408	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lod Beauty" (224,436).

CLASS 51. HEIFER, born in 1938, before 1st July.—PREMIUMS, £10, £6, £4, and £2.

1st	No. 419	Spence, Andrew, & Son, Commieston, Montrose, "Commieston Leeuwarder 2nd" (236,776 P.I.).
2nd	No. 418	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lod Petunia" (237,956).
3rd	No. 421	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Hatsumer Solace" (240,148 P.I.).
4th	No. 414	Hunter, J. G., Horn, Errol, "Horn Amelia 4th" (240,452).
V	No. 415	Johnston, Thomas, & Son, Standalane, Falkirk, "Standalane Jonge Warida" (245,512).
H	No. 422	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Corneliske" (240,142 P.I.).
C	No. 416	Kirkpatrick, F. N. & J. M., Loch House, Beattock, Moffat, Dumfriesshire, "Evan Nell 4th" (238,492).

CLASS 52. HEIFER, born in 1938, on or after 1st July.—PREMIUMS, £10, £6, £4, and £2.

1st	No. 427	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, " Douneside Lod Aster " (237,934).
2nd	No. 429	Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington Sheila " (240,170).
3rd	No. 430	Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington Bloom-mijn 2nd " (240,140).
4th	No. 431	Weightman, Wesley, Old Burdon Dairy Farm, Seaham, Co. Durham, " Warden Maureen " (246,844).
V	No. 424	Christison, John, Crossveggate, Milngavie, " Crossveggate Carrie " (237,368).
H	No. 425	Kilpatrick, James, Muirhouse, Kilmarnock, " Craigiemains Rosebud 6th " (237,136).
C	No. 426	M'Kendrick, Mrs E., Craigends, Dennistoun, Kilmacolm, Renfrewshire, " Dennistoun Anema " (237,782 P.I.).

Breeder of Best Bull of any age in Classes 53 *to* 55 (" *Extra Stock* " *not eligible to compete*)—The Silver Medal.

No. 441 Weightman, Albert, Middle Herrington Farm, Sunderland.

Champion Prize of £5 given by the British Friesian Cattle Society *for the best Male Animal exhibited.* " *Extra Stock* " *eligible to compete.*

No. 435 Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington (imported 1936) Leo " (46,237).

CLASS 53. BULL, born in or before 1936.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 432	Johnston, Thomas, & Son, Standalane, Falkirk, " Standalane (imported 1936) Jongbert " (47,029).
2nd	No. 434	Pathhead & Sinclairtown Reform Co-operative Society, Ltd., 102 Commercial Street, Kirkcaldy, " Loirston King 2nd " (44,317).
3rd	No. 433	M'Kendrick, Robert E., Cameron, Windygates, Fife, " Barnbeth Britmar " (47,501 P.I.).

EXTRA STOCK.

The following received an award of £10:—

No. 435 Weightman, Albert, Middle Herrington Farm, Sunderland, " Herrington (imported 1936) Leo " (46,237).

CLASS 54. BULL, born in 1937.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 441	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Romance" (49,723 P.I.).
2nd	No. 439	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lodbert 11th" (49,321).
3rd	No. 438	Hall, Ernest B., Hales Hall, Market Drayton, Shropshire, "Hales Zwart Theme" (49,631 P.I.).
4th	No. 440	Pathhead & Sinclairtown Reform Co-operative Society, Ltd., 102 Commercial Street, Kirkcaldy, "Glentanar Ringarik" (52,003).
V	No. 436	Allan, Thomas D., & Sons, Parkhouse, Biggar, Lanarkshire, "Parkhouse Hiltkees" (50,247 P.I.).

CLASS 55. BULL, born in 1938.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 443	Christison, John, Crossveggate, Milngavie, "Someries Roland" (53,155 P.I.).
2nd	No. 454	Weightman, Wesley, Old Burdon Dairy Farm, Seaham, Co. Durham, "Warden Alpha" (53,439).
3rd	No. 445	Hall, Ernest B., Hales Hall, Market Drayton, Shropshire, "Hales Zwart Helm" (52,073 P.I.).
4th	No. 453	Weightman, Albert, Middle Herrington Farm, Sunderland, "Herrington Symbol" (52,213 P.I.).
V	No. 451	MacRobert Trustees, Douneside, Melgum, and Cromar Estate Office, Tarland, Aberdeenshire, "Douneside Lod Pilot" (51,753).
H	No. 447	Johnston, Thomas, & Son, Standalane, Falkirk, "Standalane Jelbert" (53,199 P.I.).
C	No. 442	Cairns, A. E., Whitehouse Farm, Leamside, Fencehouses, Co. Durham, "Herrington Statesman" (52,207).

HORSES

CLYDESDALE STALLION AND COLT.

PRESIDENT'S CHAMPION MEDAL
for best Clydesdale Stallion or Colt.

No. 470 Campbell, G. & J., Gartness, by Balfron, " Gartness Control " (23,385).

Reserve—No. 489 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Independent."

Renfrewshire Perpetual Gold Challenge Cup, value £250, *for best Clydesdale Stallion or Colt, " Extra Stock " eligible to compete.* This Cup, along with an endowment of £500, was provided from money collected in Renfrewshire by the late Provost Muir M'Kean of Paisley, and is in commemoration of the Society's first Show in the county of Renfrew in 1913.

No. 470 Campbell, G. & J., Gartness, by Balfron, " Gartness Control " (23,385).

Reserve—No. 489 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Independent."

Cawdor Challenge Cup, value 50 guineas, *for best Clydesdale Stallion or Colt registered in the Clydesdale Stud Book, " Extra Stock " eligible to compete.* This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland.

No. 489 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Independent."

Breeder of best Male Animal of any age in Classes 56 *to* 59 (*" Extra Stock " not eligible to compete*)—The Silver Medal.

No. 470 Robertson, Thomas, Townhead, Annbank.

CLASS 56. STALLION, born before 1936.—PREMIUMS, £20, £15, £10, and £4.

1st No. 456 Kilpatrick, James, Craigie Mains, Kilmarnock, " Craigie Topsman " (22,890).
2nd No. 459 Templeton, T. & M., Sandyknowe, Kelso, " Sandyknowe Ideal " (22,984).
3rd No. 455 Johnston, James, Dunmore Home Farm, Falkirk, " Craigie Hollybush " (22,640).
4th No. 457 Murdoch, Henry, Balgreen, Hollybush, Ayrshire, " Balgreen Inspiration " (22,401).
V No. 458 Stewart, Andrew, Cashley, Buchlyvie, " Cashley Ideal " (22,874).

CLASS 57. ENTIRE COLT, born in 1936.—PREMIUMS, £20, £15, £10, and £4.

1st No. 468 Sleigh, John P., & Sons, St John's Wells, Fyvie, "Epigram" (23,153).
2nd No. 467 Park, Robert, Brunstane, Portobello, "Brunstane Yet" (23,094).
3rd No. 469 Templeton, T. & M., Sandyknowe, Kelso, "Erland" (23,154).
4th No. 462 Cairns, James, Lochmalony, Cupar, Fife, "Fascinator" (23,159).
V No. 460 Adams, David, Auchencraig, Dumbarton, "Dees Gladiator" (23,360).

William Taylor Memorial Prize of £10 and Certificate *to the Breeder of the best Clydesdale Colt entered in Classes* 58 *and* 59. Given by William Taylor Memorial Committee.

No. 470 Robertson, Thomas, Townhead, Annbank.

CLASS 58. ENTIRE COLT, born in 1937.—PREMIUMS, £20, £15, £10, and £4.

1st No. 470 Campbell, G. & J., Gartness, by Balfron, "Gartness Control" (23,385).
2nd No. 474 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Chieftain" (23,338).
3rd No. 482 Templeton, T. & M., Sandyknowe, Kelso, "Mandate" (23,420).
4th No. 476 M'Gregor, Hugh, Ballinton, Thornhill, Stirling, "Ballindene" (23,292).
V No. 478 Marshall, Albert James, Bridgebank, Stranraer, "Bridgebank Captivator" (23,317).
H No. 471 Clark, Alexander, Strathore House, Thornton, Fife, "Strathore Royalist" (23,460).
C No. 480 Templeton, T. & M., Sandyknowe, Kelso, "Solarium" (23,455).

CLASS 59. ENTIRE COLT, born in 1938.—PREMIUMS, £15, £9, £6, and £4.

1st No. 489 Kilpatrick, James, Craigie Mains, Kilmarnock, "Craigie Independent."
2nd No. 499 Templeton, T. & M., Sandyknowe, Kelso.
3rd No. 484 Clark, Alexander, Strathore House, Thornton, Fife, "Strathore."
4th No. 488 Johnston, James, Dunmore Home Farm, Falkirk.
V No. 490 Kilpatrick, James, Hawkrigg House, Wigton, Cumberland, "Hawkrigg Copyright."
H No. 497 Sommerville, R. & A., Wester Cowden, Dalkeith, "Cowden Ideal."
C No. 493 Murdoch, Henry, Balgreen, Hollybush, Ayrshire, "Balgreen Paramount."
C No. 492 Marshall, Albert James, Bridgebank, Stranraer.

CLYDESDALE GELDING

Got by a Registered Clydesdale Stallion.

PRESIDENT'S CHAMPION MEDAL
for best Clydesdale Gelding.

No. 507 Anderson, Sir Kenneth S., Bt., K.C.M.G., The Yair, Galashiels, " Campbell."

Reserve—No. 503 Greig, Messrs, Housenrigg, Brayton, Aspatria, Cumberland, " Sir James."

The James Clark Silver Challenge Cup, value 50 guineas, *for best Clydesdale Gelding. " Extra Stock " eligible to compete.* Given by Mr James Clark, Windlaw Farm, Carmunnock.

No. 507 Anderson, Sir Kenneth S., Bt., K.C.M.G., The Yair, Galashiels, " Campbell."

CLASS 60. GELDING, born before 1936.—PREMIUMS, £15, £9, £6, and £4.

1st No. 503 Greig, Messrs, Housenrigg, Brayton, Aspatria, Cumberland, " Sir James."
2nd No. 506 Young, William, West Preston, Preston Mill, Dumfries, " Preston John."
3rd No. 501 Anderson, Sir Kenneth S., Bt., K.C.M.G., The Yair, Galashiels, " Johnnie Walker."
4th No. 504 Kinning Park Co-operative Society, Ltd., 12 Coburg Street, Glasgow, " Dan."
V No. 502 Elder, Hugh, & Son, City Mills, Dunfermline, " Ned."
H No. 505 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, " Harry."

CLASS 61. GELDING, born in 1936.—PREMIUMS, £15, £9, £6, and £4.

1st No. 507 Anderson, Sir Kenneth S., Bt., K.C.M.G., The Yair, Galashiels, " Campbell."
2nd No. 512 Wilson, William, Blackbyres, Barrhead, " Sandy."
3rd No. 511 Wilson, P. & J. C., Lawhill, Auchterarder, " Robin."
4th No. 508 Greig, Messrs, Housenrigg, Brayton, Aspatria, Cumberland, " Allan."
V No. 510 Logan, John, Athelstaneford Mains, Drem, " Joe."
H No. 513 Young, William, West Preston, Preston Mill, Dumfries, " Preston Prince."
C No. 509 Logan, John, Athelstaneford Mains, Drem, " Jim."

CLASS 62. GELDING, born in 1937.—PREMIUMS, £15, £9, £6, and £4.

1st No. 517 Wilson, William, Blackbyres, Barrhead, " Davie."
2nd No. 518 Young, William, West Preston, Preston Mill, Dumfries, " Preston Man."
3rd No. 516 Wilson, P. & J. C., Lawhill, Auchterarder, " Jim."
4th No. 514 Anderson, Sir Kenneth S., Bt., K.C.M.G., The Yair, Galashiels, " Rob Roy."

CLYDESDALE MARE AND FILLY.

PRESIDENT'S CHAMPION MEDAL
for best Clydesdale Mare or Filly.

No. 543 M'Farlane, John, Bailielands, Auchterarder, " Myrene."

Reserve—No. 534 Findlay, David G., & Son, Rankinston House, Ayr, Mare, " Rankinston Moss Rose."

Cawdor Challenge Cup, value 50 guineas, *for best Clydesdale Mare or Filly, registered in the Clydesdale Stud-Book, " Extra Stock " eligible to compete.* This Cup is offered by the Clydesdale Horse Society of Great Britain and Ireland.

No. 543 M'Farlane, John, Bailielands, Auchterarder, " Myrene."

CLASS 63. MARE, of any age, with Foal at foot, or due to foal before 31st July 1939.—PREMIUMS, £20, £12, £7, and £4.

1st	No. 522	Roy, James, Ransfield, Ratho, Midlothian, " Ransfield Phyllis II."
2nd	No. 519	Adams, David, Auchencraig, Dumbarton, " Progressive Link " (60,251).
3rd	No. 521	Park, Misses M. & J., Brunstane, Portobello, " Eva."

CLASS 64. YELD MARE, born before 1936.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 527	Montgomerie, A. W., Westburn Farm, Cambuslang, " Westburn Cinnanary."
2nd	No. 528	Park, Misses M. & J., Brunstane, Portobello, " Collairnie Nannie " (62,742).
3rd	No. 529	Roy, James, Ransfield, Ratho, Midlothian, " Ransfield Rena " (64,570).
4th	No. 524	Cairns, James, Lochmalony, Cupar, Fife, " Lochmalony Ella " (58,853).
V	No. 525	Jackson, Robert, Reedyloch, Duns, " Reedyloch Beneventa " (64,230).
H	No. 526	M'Laren, William, & Sons, Fairnington, Roxburgh, " Farida."

CLASS 65. YELD MARE or FILLY, born in 1936.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 534	Findlay, David G., & Son, Rankinston House, Ayr, Mare, " Rankinston Moss Rose."
2nd	No. 533	Crawford, William, Gibbleston Farm, Bridge of Weir, Filly, " Voice of Spring."
3rd	No. 531	Beck, George M., Fremington, Brougham, Penrith, Filly, " Remember Me."
4th	No. 537	Taylor, Robert, Milton Hall, Brampton Junction, Cumberland, Filly.
V	No. 535	Kerr, John, 35 Cornton Road, Causewayhead, Stirling, Filly. " Borland Beauty."

CLASS 66. FILLY, born in 1937.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 543	M'Farlane, John, Bailielands, Auchterarder, "Myrene."
2nd	No. 545	Sleigh, Alexander, Mains of Tolquhon, Tarves, "Black Beauty."
3rd	No. 542	Johnstone, John, Millantae, Lockerbie, "May Queen."
4th	No. 538	Armstrong, J. A., The Beeches, Tarraby, Carlisle, "Tarraby Lady Betty."
V	No. 540	Blair, David, Littleinch, Wormit, Fife, "Littleinch Morag."
H	No. 547	Taylor, Robert, Milton Hall, Brampton Junction, Cumberland.
C	No. 539	Barr, James, Dunsyre Mains, Dunsyre, Lanark, "Dunsyre Modesty."
C	No. 541	Ferguson, William L., Cairnweil, Stranraer, "Loretta."

CLASS 67. FILLY, born in 1938.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 553	Campbell, G. & J., Gartness, by Balfron.
2nd	No. 561	Meikle, John P., Hoprig Mains, Macmerry, East Lothian, "Vanity."
3rd	No. 557	Drennan, John C., Carse Hall, Limavady, Co. Londonderry.
4th	No. 562	Murdoch, James, Netherton, Renfrew, "Netherton Blossom."
V	No. 558	Gray, James, West Newhall, Kingsbarns, Fife, "Crawfordston Rene."
H	No. 559	Johnston, James, Dunmore Home Farm, Falkirk.
C	No. 549	Argo, George, Petty, Fyvie.

PERCHERON.

PRESIDENT'S CHAMPION MEDAL for best Percheron.

No. 565 Montgomerie, A. W., Westburn Farm, Cambuslang, "Motion" (B 1612).

Reserve—No. 571 Robertson, Major William B., Colton, Dunfermline, "Millhills Saucy" (B 1380).

CLASS 68. MARE, of any age, with Foal at foot, or due to foal before 31st July 1939.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 565	Montgomerie, A. W., Westburn Farm, Cambuslang, "Motion" (B 1612).
2nd	No. 566	Stewart, Duncan M'Callum, Millhills, Crieff, "Moyée" (B 1379).
3rd	No. 564	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Histon Beauty 3rd" (B 830).
4th	No. 563	Alexander, J. W., M.V.O., of Newton, Golfhill, Moffat, "Newton Princess" (1248).

CLASS 69. FILLY, born in 1936 or 1937.—PREMIUMS, £15, £9, £6, and £4.

1st	No. 571	Robertson, Major William B., Colton, Dunfermline, "Millhills Saucy" (B 1380).
2nd	No. 567	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Castle Milk Idol" (B 1608).
3rd	No. 573	Stewart, Duncan M'Callum, Millhills, Crieff, "Millhills Titania" (B 1531).
4th	No. 572	Stewart, Duncan M'Callum, Millhills, Crieff, "Millhills Tara" (B 1529).
V	No. 570	Montgomerie, A. W., Westburn Farm, Cambuslang, "Westburn Sadie" (B 1532).
H	No. 568	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Castle Milk Lily" (B 1589).

HUNTERS.

PRESIDENT'S CHAMPION MEDAL for best Hunter (Classes 70 to 80).

No. 609 Cross, Donald, Knockdon, Maybole, Gelding, "Ras."

Reserve—No. 589 Douglas, Thomas, Gatehousecote, Hawick, "Capplegill."

Dumfries Centenary Silver Challenge Cup, value £100, *for best Hunter. "Extra Stock" not eligible to compete.* Presented by members of the Dumfriesshire Hunt in 1930 to commemorate the centenary of the Highland Society's first Show at Dumfries in 1830.

No. 609 Cross, Donald, Knockdon, Maybole, Gelding, "Ras."

CLASS 70. HUNTER BROOD MARE, with Foal at foot, or due to foal before 31st July 1939.—PREMIUMS, £15, £7, and £3.

1st	No. 575	Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, "Polisher."
2nd	No. 574	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Nothing Nicer."
3rd	No. 576	Spencer-Nairn, Major Sir Robert, Bt., Leslie House, Leslie, Fife, "Ruddy Dawn."

CLASS 71. FOAL, drawn from Class 70.—PREMIUMS, £7, £4, and £2.

1st	No. 579	Spencer-Nairn, Major Sir Robert, Bt., Leslie House, Leslie, Fife, Colt.
2nd	No. 577	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, Colt.
3rd	No. 578	Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, Colt.

CLASS 72. GELDING, born in 1936—*in hand.*— PREMIUMS, £10, £5, and £3.

1st	No. 580	Currie, Miss Thomson, Clatto, Cupar, Fife, "Television II." (2223).
2nd	No. 583	Thomson, A. D., of Nenthorn, Kelso, "Golden Span" (2302).
3rd	No. 582	Russell, Major George, Kingsdale, Windygates, Fife, "Ever Ready."
V	No. 581	Dove, G. H. J., Mellerstain, Gordon, Berwickshire, "Brandy."

Best Hunter Filly, entered in Classes 73, 75, and 77, registered with a number in the Hunter Stud-Book, or the entry tendered within one month of the award—Champion Gold Medal, value £5. Given by the Hunters' Improvement and National Light Horse Breeding Society.

No. 603	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, "Shady Miss" (9250).
Reserve—No. 585	Dudgeon, A. N., Humbie, Kirkliston, West Lothian, "Arleen."

CLASS 73. FILLY, born in 1936—*in hand.*— PREMIUMS, £10, £5, and £3.

1st	No. 585	Dudgeon, A. N., Humbie, Kirkliston, West Lothian, "Arleen."
2nd	No. 587	Watherston, Jack G., Timpendean, Jedburgh, "Anchor Lass."
3rd	No. 584	Craig, Miss Evelyn, "Ardlui," East Kilbride, "Katherine II." (9132).

CLASS 74. GELDING, born in 1937—*in hand.*— PREMIUMS, £10, £5, and £3.

1st	No. 589	Douglas, Thomas, Gatehousecote, Hawick, "Capplegill."
2nd	No. 590	Dove, G. H. J., Mellerstain, Gordon, Berwickshire, "Marks Bridge" (2363).
3rd	No. 588	Currie, Miss Thomson, Clatto, Cupar, Fife, "Playmate."

CLASS 75. FILLY, born in 1937—*in hand.*— PREMIUMS, £10, £5, and £3.

1st	No. 594	Thomson, A. D., of Nenthorn, Kelso.
2nd	No. 593	Spencer-Nairn, Major Sir Robert, Bt., Leslie House, Leslie, Fife.
3rd	No. 592	Shanks, James, Nutholm, Lockerbie, "Cora."
V	No. 591	Craig, Miss Evelyn, "Ardlui," East Kilbride, "Sally VII." (9133).

CLASS 76. COLT or GELDING, born in 1938—*in hand.*—PREMIUMS, £10, £5, and £3.

1st	No. 597	Roberts, Sir James Denby, Bt., Strathallan Castle, Auchterarder, Colt.
2nd	No. 596	Newseat Stud Farm, Newseat of Manar, Inverurie, Colt, " Shaun Rhu."
3rd	No. 599	Sanderson, J. Martin, Linthill, Melrose, Gelding, " Persil."
V	No. 598	Sanderson, J. Martin, Linthill, Melrose, Gelding, " Perigill."
H	No. 600	Shanks, James, Nutholm, Lockerbie, Gelding, " Empirex."
C	No. 595	Duguid, Miss H. M., Manar, Inverurie, Colt, " Fearan."

CLASS 77. FILLY, born in 1938—*in hand.*—PREMIUMS, £10, £5, and £3.

1st	No. 603	Buchanan-Jardine, Sir John William, of Castle Milk, Bt., Castle Milk, Lockerbie, " Shady Miss " (9250).
2nd	No. 605	Taylor, R., Riddell Mains, Lilliesleaf, Melrose.
3rd	No. 602	Brown, Craig, Bonnytoun, Linlithgow, " Mona Primrose."
V	No. 601	Angus, Robert L., Ladykirk, Monkton, Ayrshire, " Lady Brian."
H	No. 604	Mann-Thomson, Miss Jessica, Dankeith, Kilmarnock, " Water Baby III." (9084).

CLASS 78. MARE or GELDING, born before 1935, to carry 14 stone and over—*in saddle.*—PREMIUMS, £15, £10, and £5.

1st	No. 609	Cross, Donald, Knockdon, Maybole, Gelding, " Ras."
2nd	No. 607	Ainslie, A. M., Elvinstone, Macmerry, Tranent, Gelding, " Scotch Farmer."
3rd	No. 612	Rodgerson, John, County Stables, Selkirk, Gelding, " Pedro."
V	No. 610	Dodgson, Miss, Coulmore, Kessock, Inverness, Gelding, " Rome Express."
H	No. 615	Walker, Captain Archibald, 20 Park Terrace, Stirling, Gelding, " Golden Orb."
C	No. 611	Grindal, Joseph, Lambeck, Skelton, Penrith, Gelding, " Crossfell."

CLASS 79. MARE or GELDING, born before 1935, to carry under 14 stone—*in saddle.*—PREMIUMS, £15, £10, and £5.

1st	No. 616	Aitkenhead, Charles, Haining Valley, Linlithgow, Mare, " Pitch Dark " (9107).
2nd	No. 621	Dixon, R. W., Lattendales, Greystoke, Penrith, Gelding, " Greystoke."
3rd	No. 625	Macfarlane, Colonel W., The Stables, Wellington Lane, Ayr, Gelding, " Rock of Bawn."
V	No. 622	Hutchison, Miss J. V., Kinloch, Ladybank, Fife, Gelding, " Garfield."
H	No. 618	Brown, Craig, Bonnytoun, Linlithgow, Gelding, " Ardivo."
C	No. 620	Currie, Miss Thomson, Clatto, Cupar, Fife, Mare, " Delphinium " (7937).

CLASS 80. MARE or GELDING, born in 1935—*in saddle.*—Premiums, £15, £10, and £5.

1st No. 629 Duguid, Miss H. M., Manar, Inverurie, Mare, " Belinda IV." (9109).
2nd No. 630 Maclagan, Miss Alison, 28 Heriot Row, Edinburgh, Gelding, " Quail " (2113).

CLASS 81. HACK of HUNTER TYPE, born in or before 1935, not exceeding 15.2 hands—*in saddle.*—Premiums, £10, £5, and £3.

1st No. 633 Dixon, Mrs Alastair, Ledcameroch, Dunblane, Perthshire, Gelding, " Acrostic."
2nd No. 636 Younger, Mrs Laurence R., Dabton, Thornhill, Dumfriesshire, Mare, " Gaiety Girl."
3rd No. 635 Duguid, Major Tom, Belhelvie Lodge, Belhelvie, Aberdeenshire, Mare, " June V." (8432).
V No. 632 Aldridge, Miss Angela, 5 Clarendon Crescent, Edinburgh, Gelding, " Cherry Brandy."
H No. 634 Dodds, James, Torr Forret, Cupar, Fife, Mare, " Nancy."

RIDING PONIES.

CLASS 82. MARE or GELDING, any age, over 13.2 hands and not exceeding 14.2 hands—*in saddle.*—Premiums, £5, £3, and £2.

1st No. 641 Salvesen, Miss E. R., Lathallan, Polmont, Stirlingshire, Gelding, " John Gilpin."
2nd No. 642 Salvesen, Miss E. R., Lathallan, Polmont, Stirlingshire, Mare, " Sally."
3rd No. 639 Newseat Stud Farm, Newseat of Manar, Inverurie, Gelding, " Who Knows."
V No. 640 Proctor, John William, Langlands, Penrith, Cumberland, Gelding, " Puzzle."
H No. 637 Arthur, Miss Ann, Montgomerie, Mauchline, Ayrshire, Mare, " Guess."
C No. 638 Dalziel, Master Ken, Nether Hallrule, Bonchester Bridge, Hawick, Gelding, " Bill."

EXTRA STOCK.

The following received an award of £3 :—

No. 643 Wilson, Miss Betty, Priestfield Lodge, Burnopfield, Co. Durham, Gelding, " Irish Light."

CLASS 83. MARE or GELDING, any age, over 12 hands and not exceeding 13.2 hands—*in saddle*—to be ridden by boy or girl not exceeding 14 years of age.—Premiums, £5, £3, and £2.

1st No. 650 Proctor, John William, Langlands, Penrith, Cumberland, Mare, " Sweetheart."
2nd No. 648 Leckie, Miss Barbara, 5 Cluny Drive, Edinburgh, Mare, " Melka."

3rd No. 645 Campbell, Miss Fiona, Kilbryde Castle, Dunblane, Gelding, " Prince."
V No. 649 Mark, Joe, Dumbreck Riding Academy, 50 Gower Street, Glasgow, Mare, " Silver Queen."
H No. 647 Forrest, Miss Maisie, " Horsville," Blane Street, Glasgow, C.4, Mare, " Sunlight."
C No. 651 Salvesen, Miss Gogo, Denham Green House, Trinity, Edinburgh, Mare, " Sally."

CLASS 84. MARE or GELDING, any age, not exceeding 12 hands—*in saddle*—to be ridden by boy or girl not exceeding 12 years of age.—PREMIUMS, £5, £3, and £2.

1st No. 653 Arthur, Master Adrian, Montgomerie, Mauchline, Ayrshire, Mare, " Sunray."
2nd No. 657 Scott, Charles, Milsington, Hawick, Gelding, " Grey Dawn."
3rd No. 656 Proctor, John William, Langlands, Penrith, Cumberland, Gelding, " Jackie."
V No. 655 Mark, Joe, Dumbreck Riding Academy, 50 Gower Street, Glasgow, Mare, " Fairy."

HILL PONY.

Perpetual Silver Challenge Cup, value £25, *for the best Hill Pony of riding type, shown in Class* 85. *" Extra Stock " eligible to compete.* Presented by Colonel Sir Henry R. Fairfax-Lucy, Bt., C.B., and Lady Fairfax-Lucy, Maxton, St Boswells.

No. 662 Macdonald, Mrs Maxwell, Carlesgill Lodge, Langholm, Dumfriesshire, Highland Mare, " Mourach " (6434).

CLASS 85. HILL PONY (HIGHLAND, FELL, or DALES), any age, to be shown in saddle.—PREMIUMS, £8, £5, £3, and £2.

1st No. 659 Dalton, John William, Snowhope Close, Eastgate, Bishop Auckland, Co. Durham, Dales Mare, " Snowhope Lucky Girl " (6568).
2nd No. 662 Macdonald, Mrs Maxwell, Carlesgill Lodge, Langholm, Dumfriesshire, Highland Mare, " Mourach " (6434).
3rd No. 660 Dalton, John William, Snowhope Close, Eastgate, Bishop Auckland, Co. Durham, Dales Mare, " Snowhope Sheila " (7473).
4th No. 661 Fairfax-Lucy, Lady, Maxton, St Boswells, Roxburghshire, Highland Mare, " Iona IV." (7240).

HIGHLAND AND WESTERN ISLAND PONIES.

PRESIDENT'S CHAMPION MEDAL
for best Highland or Western Island Pony.

No. 688 Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, Mare, " Monamore " (5515).

Reserve—No. 673 Cameron, Mrs J. A., Glenfinlas, Callander, " Gipsy Diamond " (6773).

Kinmonth Perpetual Gold Challenge Quaich *for best Highland or Western Island Pony.* This Quaich—along with a sum of money to provide a miniature replica in silver annually—was presented by Mrs Moncrieff Wright, Kinmonth, Bridge of Earn, in memory of her husband, the late John Moncrieff Wright of Kinmonth.

No. 688 Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, Mare, "Monamore" (5515).

Special Prize of £8 given by Highland Pony Society *for best Male Animal not exceeding* 14.2 *hands, entered in Classes* 86 *and* 87. *"Extra Stock" not eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 664 Wilson, T. G., Carbeth Home Farm, Balfron Station, Stirlingshire, "Monarch" (2127).

CLASS 86. STALLION, born before 1937, not exceeding 14.2 hands.—PREMIUMS, £8, £5, £3, and £2.

1st No. 664 Wilson, T. G., Carbeth Home Farm, Balfron Station, Stirlingshire, "Monarch" (2127).
2nd No. 663 Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, "Ruarie" (1835).

EXTRA STOCK.

The following received an award of £5 :—

No. 667 Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, "Beinn Odhar" (1673).

CLASS 87. ENTIRE COLT, born on or after 1st January 1937, not exceeding 14.2 hands.—PREMIUMS, £8, £5, £3, and £2.

1st No. 670 Walker, William, of Foreland, Bruichladdich, Isle of Islay, "Foreland Alfie" (2287).
2nd No. 671 Wooley, Thomas, Caledonian Hotel, Bonar Bridge, Sutherland, "Star o' Doon."
3rd No. 669 Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, "Kenmore" (2246).
4th No. 668 Cameron, Mrs J. A., Glenfinlas, Callander, "Ben Ledi" (2137).

Special Prize of £8 given by Highland Pony Society *for best Female Animal not exceeding* 14.2 *hands, entered in Classes* 88 *to* 90. *"Extra Stock" not eligible to compete. Competition strictly confined to animals passed sound and free from hereditary disease.*

No. 688 Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, Mare, "Monamore" (5515).

CLASS 88. MARE, any age, not exceeding 14.2 hands, with Foal at foot, or due to foal before 31st July 1939.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 673	Cameron, Mrs J. A., Glenfinlas, Callander, " Gipsy Diamond " (6773).
2nd	No. 679	Wright, Major D. G. Moncrieff, M.C., Elcho Park, Rhynd, Perth, " Kilmuir Princess " (6640).
3rd	No. 677	Wilson, T. G., Carbeth Home Farm, Balfron Station, Stirlingshire, " Shelagh " (6816).
4th	No. 675	Department of Agriculture for Scotland, Stud Farms, Inverness, " May Mist of Knocknagael " (6688).
V	No. 672	Bonnar, Mrs A. O., 20 Wester Coates Gardens, Edinburgh, " Sheila of Monzie."
H	No. 674	Cameron, Mrs J. A., Glenfinlas, Callander, " Borve Ledi " (6959).
C	No. 678	Wooley, Thomas, Caledonian Hotel, Bonar Bridge, Sutherland, " Mary of Garriehallie."

CLASS 89. YELD MARE or FILLY, born before 1937, not exceeding 14.2 hands.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 688	Purdie, Thomas, Aucheneck, Killearn, Stirlingshire, Mare, " Monamore " (5515).
2nd	No. 683	Department of Agriculture for Scotland, Stud Farms, Inverness, Mare, " Moira of Knocknagael " (7501).
3rd	No. 684	Graham, Lady Jean, Brodick Castle, Isle of Arran, Mare, " Morag IV." (6799).
4th	No. 681	de Beaumont, Miss, Shalbourne Manor, Marlborough, Wilts., Mare, " Glentanar Fiona " (6975).
V	No. 682	Department of Agriculture for Scotland, Stud Farms, Inverness, Mare, " Fender Lassie " (7298).
H	No. 680	Blair, Mrs A. J., Beananach, Strathyre, Perthshire, Mare, " Shonaidh of Beananach."
C	No. 685	Honeyman, Mrs R. Wemyss, Derculich, Strathtay, Perthshire, Mare, " May Blossom of Derculich " (7162).
C	No. 690	Wright, Major D. G. Moncrieff, M.C., Elcho Park, Rhynd, Perth, Mare, " Kate V." (7352).

CLASS 90. FILLY, born on or after 1st January 1937, not exceeding 14.2 hands.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 691	Cameron, Mrs J. A., Glenfinlas, Callander, " Ledi Betty " (7158).
2nd	No. 693	Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, " Dawn of Scatwell " (7449).
3rd	No. 696	Honeyman, Mrs R. Wemyss, Derculich, Strathtay, Perthshire, " Iochean of Derculich."
4th	No. 697	Honeyman, Mrs R. Wemyss, Derculich, Strathtay, Perthshire, " Maritana of Derculich."
V	No. 692	Cross, Sir William, of Scatwell, Bt., Muir of Ord, Ross-shire, " Scatwell Dora " (7450).
H	No. 694	de Beaumont, Miss, Shalbourne Manor, Marlborough, Wilts., " Moonlight of Mull " (7250).
C	No. 695	Ewing, Major Ian, Mounthooly, Jedburgh, " Mounthooly Mist " (7505).

SHETLAND PONIES.

(ALL SHOWN IN HAND.)

PRESIDENT'S CHAMPION MEDAL for best Shetland Pony.

No. 721 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Pearl" (4726).

Reserve—No. 715 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Truda."

Dundee Citizens' Perpetual Silver Challenge Cup, value about £50, *for the best Shetland Pony. "Extra Stock" eligible to compete.* This Cup was presented by the Citizens of Dundee to commemorate the holding of the Society's Annual Show at Dundee in 1933.

No. 721 Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Pearl" (4726).

Perpetual Silver Challenge Cup, value £50, *for best Group of Shetland Ponies drawn from the ordinary Classes, consisting of one male and two females, "Extra Stock" eligible to compete.* Presented by a few members of the Shetland Pony Stud-Book Society.

Nos. 708, 715, and 721 Kerr, J. E., of Harviestoun, Dollar.

Silver Medal *for the best Shetland Pony of the sex opposite to that of the winner of the President's Medal, entered or eligible for entry in the Shetland Pony Stud-Book.* Given by the Shetland Pony Stud-Book Society.

No. 703 Ritchie, Miss A. R., Netherley House, near Stonehaven, "Harviestoun Beau" (1369).

CLASS 91. STALLION, not exceeding 10½ hands, born before 1936. —PREMIUMS, £8, £5, £3, and £2.

1st No. 703 Ritchie, Miss A. R., Netherley House, near Stonehaven, "Harviestoun Beau" (1369).
2nd No. 699 Cox, Mrs Maurice, Marshwood Manor, Bridport, Dorset, "Rustic Sprite of Standen" (1343).
3rd No. 700 Cox, Mrs Maurice, Marshwood Manor, Bridport, Dorset, "Alert of Maryfield" (1351).
4th No. 702 Dick, Mrs E. M., of Transy, Dunfermline, "Helistric of Transy" (1371).
V No. 701 Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen, "Silver Prince of Mundurno."
H No. 698 Bethune, William, St Elmo, Peat Inn, Cupar, Fife, "Harviestoun Spark" (1370).

EXTRA STOCK.

The following received an award of £5 :—

No. 704 Dick, Mrs E. M., of Transy, Dunfermline, "Bergastor of Transy" (1360).

CLASS 92. ENTIRE COLT, not exceeding 10½ hands, born in 1936 or 1937.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 705	Cox, Mrs Maurice, Marshwood Manor, Bridport, Dorset, "Sparkler of Marshwood."
2nd	No. 708	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Pan."
3rd	No. 707	Dick, Mrs E. M., of Transy, Dunfermline, "Sataro of Transy."
4th	No. 706	Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen, "Otter of Fintray."

CLASS 93. MARE, not exceeding 10½ hands, with Foal at foot, or due to foal before 31st July 1939.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 715	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Truda."
2nd	No. 714	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Beth."
3rd	No. 712	Dick, Mrs E. M., of Transy, Dunfermline, "Stelmone of Transy" (4668).
4th	No. 716	Ritchie, Miss A. R., Netherley House, near Stonehaven, "Mischief of Netherley" (4734).
V	No. 711	Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen, "Mermaid of Mundurno" (787 I.S.).

CLASS 94. YELD MARE, not exceeding 10½ hands.—PREMIUMS, £8, £5, £3, and £2.

1st	No. 721	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Pearl" (4726).
2nd	No. 717	Cox, Mrs Maurice, Marshwood Manor, Bridport, Dorset, "Rosa of Maryfield" (4702).
3rd	No. 719	Dick, Mrs E. M., of Transy, Dunfermline, "Helere of Transy."
4th	No. 720	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Dulcie" (4724).
V	No. 718	Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen, "Blue Bell II. of Mundurno."

CLASS 95. FILLY, not exceeding 10½ hands, born in 1936 or 1937. —PREMIUMS, £8, £5, £3, and £2.

1st	No. 727	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Beta."
2nd	No. 726	Kerr, J. E., of Harviestoun, Dollar, "Harviestoun Beryl."
3rd	No. 722	Cox, Mrs Maurice, Marshwood Manor, Bridport, Dorset, "Jessamine of Marshwood."
4th	No. 724	Dick, Mrs E. M., of Transy, Dunfermline, "Heleminta of Transy."
V	No. 725	Duguid, Miss H. M., Manar, Inverurie, Aberdeenshire, "Merrythought of Manar."
H	No. 723	Davidson, Alexander, Mundurno, Bridge of Don, Aberdeen, "Thora of Mundurno."

HACKNEYS IN HARNESS.

PRESIDENT'S CHAMPION MEDAL
for best Animal in the Classes for Hackneys in Harness.

No. 737 Speir, R. R., 17 Broompark Drive, Glasgow, Mare, "Miss Appleby" (26,052).

Reserve—No. 731 Kinross, William, 13 Clarendon Place, Stirling, Gelding, "Knight of the Thistle" (G 567).

CLASS 96. STALLION, MARE, FILLY, or GELDING, any age, in Harness, exceeding 14 hands, to be driven in the ring.—PREMIUMS, £15, £10, and £5.

1st No. 731 Kinross, William, 13 Clarendon Place, Stirling, Gelding, "Knight of the Thistle" (G 567).
2nd No. 732 Speir, R. R., 17 Broompark Drive, Glasgow, Mare, "Modern Miss" (26,692).
3rd No. 730 Hamilton, John M., Bogton, Muirend, Glasgow, Gelding, "Bogton Brilliant" (G 1001).
V No. 729 Hamilton, John M., Bogton, Muirend, Glasgow, Mare, "Bogton Betty" (27,257).
H No. 733 Sweeney, William T., Aultnaskiach, Inverness, Mare, "Broompark Hoyden" (27,212).

CLASS 97. STALLION, MARE, FILLY, or GELDING, any age, in Harness, 14 hands and under, to be driven in the ring.—PREMIUMS, £10, £5, and £3.

1st No. 737 Speir, R. R., 17 Broompark Drive, Glasgow, Mare, "Miss Appleby" (26,052).
2nd No. 735 Hamilton, John M., Bogton, Muirend, Glasgow, Gelding, "Bogton Triumph."
3rd No. 736 Maclean, Captain R., Drynie, Kessock, Inverness, Gelding, "Eldorado."
V No. 734 Alexander, T., Craig-an-Righ, Stirling, Mare, "Glenavon Movitone" (27,219).

HORSES IN HARNESS.

CLASS 98. DRAUGHT GELDING, any age, in Harness, shown in Cart or Lorry (and driven by single driver), it being a condition that the Horse must have been regularly worked for a period of 12 weeks prior to the first day of the Show. PREMIUMS, £10, £5, £3, £2, and £1.

Cancelled owing to insufficient entries (Regulation 12).

CLASS 99. HORSE, any age, in Harness, shown in Van or Light Lorry, it being a condition that the Horse must have been regularly worked for a period of 12 weeks prior to the first day of the Show.—PREMIUMS, £8, £5, and £3.

1st No. 1 Alloa Co-operative Society, 17 Mar Street, Alloa, " Charlie."
2nd No. 7 Lang's Bread Company, Ltd., 38 Wesleyan Street, Glasgow, S.E., " Umidwar."
3rd No. 6 Girdwood, G. & J. (Bakers), Ltd., 168 High Street, Ayr, " Jock."
V No. 11 Stevenson, J. & B., Ltd., 54 Cranston Street, Glasgow, C.3, " Paul."
H No. 9 Milanda Bread Company, Ltd., 38 Wesleyan Street, Glasgow, S.E., " Action."
C No. 2 Beattie, William, Ltd., 116 Paton Street, Glasgow, E.1, " Albert."
C No. 5 Edinburgh Corporation Cleansing Department, 329 High Street, Edinburgh, " Sandy."

JUMPING COMPETITIONS.

Champion Prize of £10 *for most points in Prizes with one Horse in Classes* 1, 3, *and* 5.

CONDITIONS.—First Prize to count five points; Second Prize, four points; Third Prize, three points; Fourth Prize, two points; Fifth Prize, one point. The money to be evenly divided in the event of a tie.

Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Gay Boy" (6½ points).

CLASS 1. HORSE or PONY, any height.—
PREMIUMS, £20, £15, £10, £5, and £3.

1st Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Gay Boy."
2nd Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, " Jorrocks."
3rd Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Judy."
4th Snodgrass, James, Kippilaw, Dalkeith, Gelding, " Gyp."
5th equal {
Blackwood, Patrick, Balgreen, Mid-Calder, Mare, " Kopje."
Snodgrass, James, Kippilaw, Dalkeith, Gelding, " Buckle."
Dobson, D. W., High Ash, Nantwich, Cheshire, Gelding, " Gunner."
Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Sparky."

CLASS 2. HORSE or PONY, any height, confined to competitors permanently resident in Scotland. The Horse or Pony to have been the property of the competitor since 1st May 1939.—PREMIUMS, £10, £8, £5, £3, and £2.

1st Mitchell, Harold P., M.P., Tulliallan Castle, Kincardine-on-Forth, Mare, " Mary."
2nd Mitchell, Harold P., M.P., Tulliallan Castle, Kincardine-on-Forth, Gelding, " Omega."
3rd Duffy, James, 86 Knockinlaw, Kilmarnock, Gelding, " Ajack."
4th Milne, Alexander A. H., Station Stables, Cupar, Gelding, " Peter Pan."
5th Brown, Miss M. C., Westerton, Killearn, Mare, " Silver Mist."

CLASS 3. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the First Prize, and 4 inches for the winner of the Second Prize in Class 1.—PREMIUMS, £20, £15, £10, £5, and £3.

1st M'Alpine, Eric J., Ryslaw, Duns, Gelding, " Blue Silver."
2nd Snodgrass, James, Kippilaw, Dalkeith, Gelding, " Buckle."
3rd Taylor, Joseph, Moss Hall, Stretton, Warrington, Mare, " Judy."
4th, 5th equal
Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, " Jorrocks."
Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Gay Boy."

CLASS 4. HORSE or PONY, any height.—
PREMIUMS, £10, £8, £5, £3, and £2.

1st, 2nd equal
Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Gay Boy."
Taylor, Joseph, Moss Hall, Stretton, Warrington, Gelding, " Jorrocks."
3rd, 4th, 5th equal
Chambers, Miss Irene, Merrylea Farm, Merrylea Road, Newlands, Glasgow, Mare, " Anne Tucker."
Grange Brothers, Alvaston, Nantwich, Cheshire, Gelding, " Desire."
Mitchell, Harold P., M.P., Tulliallan Castle, Kincardine-on-Forth, Mare, " Mary."
Snodgrass, James, Kippilaw, Dalkeith, Gelding, " Buckle."

CLASS 5. HORSE or PONY, any height, Handicap, hurdles and gate being raised 8 inches for the winner of the First Prize, and 4 inches for the winner of the Second Prize in either of Classes 1 or 3—4 inches extra for the winner of the two First Prizes in Classes 1 and 3.—PREMIUMS, £15, £10, £5, £3, and £2.

1st Grange Brothers, Alvaston, Nantwich, Cheshire, Gelding, " Desire."
2nd Snodgrass, James, Kippilaw, Dalkeith, Gelding, " Gyp."
3rd Dobson, D. W., High Ash, Nantwich, Cheshire, Gelding, " Walton."
4th, 5th equal
Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Mystery."
Hall, Henry, Whitchester, Heddon-on-the-Wall, Gelding, " Sparky."

SHEEP

BLACKFACE.

PRESIDENT'S CHAMPION MEDAL
for best Blackface Sheep.

No. 817 Macfarlane, James, Steps of Cally, Blairgowrie, "Queen o' the South."

Reserve—No. 748 Bowser, D. C., Argaty, Doune, "Perseverance."

Fife and Kinross Perpetual Gold Challenge Cup, value £200, *for best Blackface Sheep. "Extra Stock" eligible to compete.* This Cup, along with an endowment of £400, was subscribed for by the Counties of Fife and Kinross in commemoration of the Society's first Show at Cupar, Fife, in 1912.

No. 817 Macfarlane, James, Steps of Cally, Blairgowrie, "Queen o' the South."

Reserve—No. 748 Bowser, D. C., Argaty, Doune, "Perseverance."

The "James Archibald" Prize, of about £20, *for the best Sheep in the Blackface Classes (excluding Lambs), "Extra Stock" eligible to compete.* This prize consists of the annual free income from a fund of £600, gifted by the late David Archibald, Christchurch, New Zealand, to found a Prize to be offered at the Annual Shows of the Society in commemoration of his brother, the late James Archibald, Overshiels, Stow.

No. 817 Macfarlane, James, Steps of Cally, Blairgowrie, "Queen o' the South."

CLASS 100. TUP, three Shear and over.—
PREMIUMS, £12, £8, £4, and £2.

1st No. 740 Hamilton, Matthew G., Woolfords, West Calder, Midlothian.
2nd No. 738 Cayley, Arthur, of Carham Hall, Coldstream, "John Bull."
3rd No. 742 Napier, James, Gavinburn, Old Kilpatrick.
4th No. 743 Provan, A. & D., Gateside, Douglas, Lanark, "Television."
V No. 741 Macfarlane, James, Steps of Cally, Blairgowrie, "Benachally."
H No. 739 Cayley, Arthur, of Carham Hall, Coldstream, "Young Hazel."
C No. 744 Rennie, H. Wylie, Craighat, Dumgoyne Station, Stirlingshire, "Maturity."

EXTRA STOCK.

The following received an award of £5 :—

No. 746	Hamilton, Matthew G., Woolfords, West Calder, Midlothian, " King's Champion."

CLASS 101. TUP, two Shear.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 748	Bowser, D. C., Argaty, Doune, " Perseverance."
2nd	No. 756	Rennie, H. Wylie, Craighat, Dumgoyne Station, Stirlingshire, " His Majesty."
3rd	No. 752	Hamilton, Matthew G., Woolfords and South Cobbinshaw, West Calder, Midlothian.
4th	No. 750	Hamilton, Matthew G., Woolfords, West Calder, Midlothian.
V	No. 755	Provan, A. & D., Gateside, Douglas, Lanark, " Cavalcade."
H	No. 749	Forbes, John, Severie, Doune, " Duncomb."
C	No. 747	Bowser, D. C., Argaty, Doune, " Admiral."

CLASS 102. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 768	Hamilton, Matthew G., Woolfords, West Calder, Midlothian.
2nd	No. 780	Provan, A. & D., Gateside, Douglas, Lanark.
3rd	No. 762	Bowser, D. C., Argaty, Doune.
4th	No. 781	Rosebery, The Earl of, D.S.O., M.C., Moorfoot Farm, Gorebridge.
V	No. 777	Paton, Robert C., Lettre, Killearn.
H	No. 763	Cayley, Arthur, of Carham Hall, Coldstream.
C	No. 760	Bowser, D. C., Argaty, Doune.
C	No. 761	Bowser, D. C., Argaty, Doune.
C	No. 769	Hamilton, Matthew G., Woolfords, West Calder, Midlothian.
C	No. 778	Provan, A. & D., Gateside, Douglas, Lanark.

CLASS 103. TUP LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 791	Macfarlane, James, Steps of Cally, Blairgowrie.
2nd	No. 793	Marshall & Mitchell, Bleaton, Blairgowrie.
3rd	No. 799	Rottenburg, F. A., of Lochlane, Crieff.
V	No. 786	Cayley, Arthur, of Carham Hall, Coldstream.
H	No. 790	Macfarlane, James, Steps of Cally, Blairgowrie.
C	No. 795	Rosebery, The Earl of, D.S.O., M.C., Moorfoot Farm, Gorebridge.

The " Lochlane " Silver Challenge Cup, value £50, *for best Group of three Blackface Sheep, consisting of Ewe, Gimmer, and Ewe Lamb, drawn from Classes* 104 *to* 106, " *Extra Stock* " *eligible to compete.* Presented by Mr and Mrs Francis A. Rottenburg, Lochlane, Crieff.

Nos. 808, 817, and 831	Macfarlane, James, Steps of Cally, Blairgowrie.

CLASS 104. EWE, above one Shear (born before 1938), with Lamb at foot.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 808	Macfarlane, James, Steps of Cally, Blairgowrie, " Helen Fair."
2nd	No. 810	Rottenburg, F. A., of Lochlane, Crieff.
3rd	No. 807	Macfarlane, James, Steps of Cally, Blairgowrie, " Annie Laurie."
4th	No. 805	Glasgow, Corporation of, Brackenhirst Farm, Airdrie.
V	No. 801	Cayley, Arthur, of Carham Hall, Coldstream, " Queen Bee."
H	No. 804	Glasgow, Corporation of, Brackenhirst Farm, Airdrie.
C	No. 811	Stewart, John, Airtnock, Fenwick, " Kate."

CLASS 105. SHEARLING EWE or GIMMER (born in 1938).—PREMIUMS, £10, £5, £3, and £2.

1st	No. 817	Macfarlane, James, Steps of Cally, Blairgowrie, " Queen o' the South."
2nd	No. 818	Macfarlane, James, Steps of Cally, Blairgowrie.
3rd	No. 814	Cayley, Arthur, of Carham Hall, Coldstream.
4th	No. 823	Stewart, John, Airtnock, Fenwick, " Gipsy Queen."
V	No. 820	Rottenburg, F. A., of Lochlane, Crieff.
H	No. 816	Howison, A. W., Rannagulzion, Blairgowrie.
C	No. 815	Glasgow, Corporation of, Brackenhirst Farm, Airdrie.

CLASS 106. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 831	Macfarlane, James, Steps of Cally, Blairgowrie.
2nd	No. 830	Howison, A. W., Rannagulzion, Blairgowrie.
3rd	No. 828	Cayley, Arthur, of Carham Hall, Coldstream.
V	No. 827	Cayley, Arthur, of Carham Hall, Coldstream.
H	No. 834	Rottenburg, F. A., of Lochlane, Crieff.
C	No. 835	Rottenburg, F. A., of Lochlane, Crieff.

CHEVIOT.

PRESIDENT'S CHAMPION MEDAL for best Cheviot Sheep.

No. 840 Elliot, Arthur, Hindhope, Jedburgh.

Reserve—No. 877 Douglas, Walter S., Upper Hindhope, Jedburgh.

Borthwick Perpetual Challenge Cup, value £25, gifted by Mr J. Borthwick, *for best Sheep in the Cheviot Classes. " Extra Stock " eligible to compete.* Given by the Cheviot Sheep Society.

No. 840 Elliot, Arthur, Hindhope, Jedburgh.

CLASS 107. TUP, above one Shear.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 840	Elliot, Arthur, Hindhope, Jedburgh.
2nd	No. 839	Elliot, Arthur, Hindhope, Jedburgh.
3rd	No. 838	Douglas, Walter S., Upper Hindhope, Jedburgh.
4th	No. 845	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Lottery."
V	No. 844	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Mid-day Sun" (5638).
H	No. 837	Douglas, Walter S., Upper Hindhope, Jedburgh.
C	No. 841	Hogg, George, Penmanshiel, Grantshouse, "Whitehaugh Geordie" (5740).

CLASS 108. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 852	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 847	Douglas, Walter S., Upper Hindhope, Jedburgh.
3rd	No. 851	Elliot, John, Blackhaugh, Clovenfords.
4th	No. 857	Thorburn, Lady, Glenormiston, Innerleithen.
V	No. 861	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Whitehaugh Sensation" (5760).
H	No. 858	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Black Speck" (5744).
C	No. 855	Hogg, George, Penmanshiel, Grantshouse.

CLASS 109. TUP LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 862	Douglas, Walter S., Upper Hindhope, Jedburgh.
2nd	No. 873	Thorburn, Lady, Glenormiston, Innerleithen.
3rd	No. 866	Elliot, John, Blackhaugh, Clovenfords.
V	No. 867	Elliot, John, Blackhaugh, Clovenfords.
H	No. 875	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick.
C	No. 876	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick.
C	No. 874	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick.

CLASS 110. EWE, above one Shear, with Lamb at foot.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 877	Douglas, Walter S., Upper Hindhope, Jedburgh.
2nd	No. 879	Elliot, Arthur, Hindhope, Jedburgh.
3rd	No. 878	Douglas, Walter S., Upper Hindhope, Jedburgh.
4th	No. 881	Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh.
V	No. 880	Hogg, George, Penmanshiel, Grantshouse.
H	No. 882	Thorburn, Lady, Glenormiston, Innerleithen.

CLASS 111. SHEARLING EWE or GIMMER.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 888	Elliot, Arthur, Hindhope, Jedburgh.
2nd	No. 887	Douglas, Walter S., Upper Hindhope, Jedburgh.
3rd	No. 885	Douglas, Walter S., Upper Hindhope, Jedburgh.
4th	No. 889	Elliot, Arthur, Hindhope, Jedburgh.
V	No. 896	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Rockfel."
H	No. 895	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick, "Flashy."
C	No. 893	Mathison, William, & Son, Shoestanes, Heriot.
C	No. 886	Douglas, Walter S., Upper Hindhope, Jedburgh.

CLASS 112. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 902	Elliot, John, Blackhaugh, Clovenfords.
2nd	No. 898	Douglas, Walter S., Upper Hindhope, Jedburgh.
3rd	No. 901	Elliot, John, Blackhaugh, Clovenfords.
V	No. 899	Douglas, Walter S., Upper Hindhope, Jedburgh.
H	No. 909	Wilkinson, Captain Percival C. E., Whitehaugh, Hawick.
C	No. 903	Hogg, George, Penmanshiel, Grantshouse.
C	No. 904	Mathison, William, & Son, Shoestanes, Heriot.

BORDER LEICESTER.

PRESIDENT'S CHAMPION MEDAL
for best Border Leicester Sheep.

No. 927 Cameron, R. C., Greenlawdean, Berwickshire, " Lawson's Glory " (11,995).

Reserve—No. 930 Cross, Donald, Knockdon, Maybole, " Bogardo Sunshine " (11,830).

The " Angus " Perpetual Silver Challenge Cup, value 50 guineas, *for best Border Leicester Sheep, " Extra Stock " eligible to compete.* This Cup was presented by the Angus Agricultural Association to commemorate the holding of the Society's Annual Show at Dundee in 1933.

No. 927 Cameron, R. C., Greenlawdean, Berwickshire, " Lawson's Glory " (11,995).

Gold Medal *for best Male Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock Book. Animals entered as " Extra Stock " not eligible.* Given by the Society of Border Leicester Sheep Breeders.

No. 927 Cameron, R. C., Greenlawdean, Berwickshire, " Lawson's Glory " (11,995).

CLASS 113. TUP, above one Shear.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 916	Gray, William, & Sons, Park, Maybole, " Greenlaw Coronation " (11,579).
2nd	No. 915	Forrest, Robert S., Thornhome, Carluke, " Bogardo Jester " (11,455).
3rd	No. 918	Mansfield Estates, Balboughty, Perth, " Bold Robin " (11,839).
4th	No. 912	Bosanquet, C. I. C., Rock, Alnwick, Northumberland, " Hillend Masterpiece " (11,603).
V	No. 917	Macbeth, W. Gilchrist, of Dunira, Comrie, " Balbirnie Spring " (11,429).
H	No. 913	Cameron, R. C., Greenlawdean, Berwickshire, " Knockon " (10,182).
C	No. 920	Murray, Robin G., Waulkmill, Biggar, " Scottish Pride " (12,088).

CLASS 114. SHEARLING TUP.—PREMIUMS, £12, £8, £4, and £2.

1st	No. 927	Cameron, R. C., Greenlawdean, Berwickshire, "Lawson's Glory" (11,995).
2nd	No. 930	Cross, Donald, Knockdon, Maybole, "Bogardo Sunshine" (11,830).
3rd	No. 923	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
4th	No. 922	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
V	No. 935	Macbeth, W. Gilchrist, of Dunira, Comrie.
H	No. 934	Macbeth, W. Gilchrist, of Dunira, Comrie.
C	No. 926	Brown, Alexander, Smailholm, Kelso.
C	No. 937	Mansfield Estates, Balboughty, Perth.

CLASS 115. TUP LAMB.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 963	Grant, The Executors of the late Mrs Brewster, Thorn, Blairgowrie.
2nd	No. 952	Cameron, R. C., Greenlawdean, Berwickshire.
3rd	No. 958	Cross, Donald, Knockdon, Maybole.
4th	No. 959	Cross, Donald, Knockdon, Maybole.
V	No. 945	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
H	No. 951	Cameron, R. C., Greenlawdean, Berwickshire.
C	No. 948	Black, John S. T., Fisherton, Dunure, Ayrshire.
C	No. 955	Clarkson, Alexander, Pretts Mill, Lanark.
C	No. 974	Murray, Robin G., Waulkmill, Biggar.

Gold Medal *for best Female Animal in the Border Leicester Classes, registered or eligible for registration in the Border Leicester Flock Book. Animals entered as " Extra Stock " not eligible.* Given by the Society of Border Leicester Sheep Breeders.

No. 977 Cross, Donald, Knockdon, Maybole, (BL 39) L 4.

CLASS 116. EWE, above one Shear.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 977	Cross, Donald, Knockdon, Maybole, (BL 39) L 4.
2nd	No. 978	Cross, Donald, Knockdon, Maybole, (BL 39) M 7.
3rd	No. 979	Forrest, Robert S., Thornhome, Carluke, (BL 22) K 24.
4th	No. 976	Bosanquet, C. I. C., Rock, Alnwick, Northumberland.
V	No. 984	Moyes, James C., Renmure, Inverkeilor, Arbroath.
H	No. 986	Murray, R. G., & Son, Spittal, Biggar.
C	No. 982	Macbeth, W. Gilchrist, of Dunira, Comrie.
C	No. 987	Murray, Robin G., Waulkmill, Biggar, (BL 730) L 19.

CLASS 117. SHEARLING EWE or GIMMER.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 989	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
2nd	No. 992	Black, John S. T., Fisherton, Dunure, Ayrshire, (BL 94 A) O 14.
3rd	No. 994	Cameron, R. C., Greenlawdean, Berwickshire, (BL 1 B) O 2.
4th	No. 996	Cross, Donald, Knockdon, Maybole, (BL 39) O 4.

V	No. 990	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
H	No. 1001	Macbeth, W. Gilchrist, of Dunira, Comrie.
C	No. 993	Brown, Alexander, Smailholm, Kelso.
C	No. 998	Forrest, Robert S., Thornhome, Carluke, (BL 22) O 58.
C	No. 1003	Moyes, James C., Renmure, Inverkeilor, Arbroath.

CLASS 118. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 1014	Cameron, R. C., Greenlawdean, Berwickshire.
2nd	No. 1011	Black, John S. T., Fisherton, Dunure, Ayrshire.
3rd	No. 1021	Murray, Robin G., Waulkmill, Biggar.
V	No. 1013	Cameron, R. C., Greenlawdean, Berwickshire.
H	No. 1019	Macbeth, W. Gilchrist, of Dunira, Comrie.
C	No. 1008	Balfour, Colonel E. W. S., D.S.O., O.B.E., M.C., of Balbirnie, Markinch.
C	No. 1018	Grant, The Executors of the late Mrs Brewster, Thorn, Blairgowrie.
C	No. 1020	Mansfield Estates, Balboughty, Perth.

HALF-BRED.

PRESIDENT'S CHAMPION MEDAL
for best Half-Bred Sheep.

No. 1038 Armstrong, Thomas, Eastcote, Hawick.

Reserve—No. 1022 Armstrong, Thomas, Eastcote, Hawick.

CLASS 119. SHEARLING TUP.—PREMIUMS, £10, £7, and £3.

1st	No. 1022	Armstrong, Thomas, Eastcote, Hawick.
2nd	No. 1024	Elliot, John, Blackhaugh, Clovenfords.
3rd	No. 1026	Walton, J., Roseden, Wooperton, Northumberland.
V	No. 1025	Elliot, John, Blackhaugh, Clovenfords.
H	No. 1023	Armstrong, Thomas, Eastcote, Hawick.

CLASS 120. EWE, above one Shear.—PREMIUMS, £10, £5, and £2.

1st	No. 1031	Walton, J., Roseden, Wooperton, Northumberland.
2nd	No. 1028	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 1029	Templeton, T. & M., Sandyknowe, Kelso.
V	No. 1027	Blythe, Charles, & Sons, Barberfield, Haddington.
H	No. 1030	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 121. SHEARLING EWE or GIMMER.—PREMIUMS, £10, £5, and £2.

1st	No. 1036	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 1037	Walton, J., Roseden, Wooperton, Northumberland.
3rd	No. 1033	Hislop, J. R., Darlingfield, Gordon.
V	No. 1035	Templeton, T. & M., Sandyknowe, Kelso.
H	No. 1034	Lamb, N. J., East Fleetham, Seahouses, Northumberland.
C	No. 1032	Clapperton, George, Garvald Mains, Haddington.

CLASS 122. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 1038	Armstrong, Thomas, Eastcote, Hawick.
2nd	No. 1044	Rosebery, The Earl of, D.S.O., M.C., Dalmeny House, Edinburgh.
3rd	No. 1042	Elliot, F. & C., Crunklaw, Duns.
V	No. 1045	Walton, J., Roseden, Wooperton, Northumberland.
H	No. 1039	Armstrong, Thomas, Eastcote, Hawick.

OXFORD DOWN.

PRESIDENT'S CHAMPION MEDAL for best Oxford Down Sheep.

No. 1054 Templeton, T. & M., Sandyknowe, Kelso.

Reserve—No. 1065 Lamb, N. J., East Fleetham, Seahouses, Northumberland.

CLASS 123. SHEARLING TUP.—PREMIUMS, £8, £5, and £3.

1st	No. 1054	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 1053	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 1051	Lamb, N. J., East Fleetham, Seahouses, Northumberland, "Majestic."
V	No. 1047	Bell, John, Balbuthie, Kilconquhar.
H	No. 1049	Kinnaird, Representatives of the late John, Papple, Haddington.
C	No. 1052	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 124. SHEARLING EWE or GIMMER.—PREMIUMS, £8, £5, and £3.

1st	No. 1062	Templeton, T. & M., Sandyknowe, Kelso.
2nd	No. 1057	Lamb, N. J., East Fleetham, Seahouses, Northumberland.
3rd	No. 1061	Templeton, T. & M., Sandyknowe, Kelso.
V	No. 1055	Bell, John, Balbuthie, Kilconquhar.
H	No. 1058	Lawson, William H., Frithfield, Anstruther.
C	No. 1056	Bell, John, Balbuthie, Kilconquhar.
C	No. 1060	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 125. TUP LAMB.—PREMIUMS, £8, £5, and £3.

1st	No. 1065	Lamb, N. J., East Fleetham, Seahouses, Northumberland.
2nd	No. 1068	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 1070	Templeton, T. & M., Sandyknowe, Kelso.
V	No. 1066	Lawson, William H., Frithfield, Anstruther.
H	No. 1064	Bell, John, Balbuthie, Kilconquhar.
C	No. 1067	Lawson, William H., Frithfield, Anstruther.
C	No. 1069	Templeton, T. & M., Sandyknowe, Kelso.

CLASS 126. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 1073	Lamb, N. J., East Fleetham, Seahouses, Northumberland.
2nd	No. 1077	Templeton, T. & M., Sandyknowe, Kelso.
3rd	No. 1074	Lawson, William H., Frithfield, Anstruther.
V	No. 1072	Bell, John, Balbuthie, Kilconquhar.
H	No. 1075	Lawson, William H., Frithfield, Anstruther.
C	No. 1071	Bell, John, Balbuthie, Kilconquhar.
C	No. 1076	Templeton, T. & M., Sandyknowe, Kelso.

SUFFOLK.

PRESIDENT'S CHAMPION MEDAL for best Suffolk Sheep.

No. 1081 Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks., " Southburn Baronet 3rd " (25,133).

Reserve—No. 1092 Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.

Silver Challenge Cup, value £15, offered by the Suffolk Sheep Society *for best Group of Suffolk Sheep, consisting of one Tup, one shear and over, one Shearling Ewe or Gimmer, one Tup Lamb, and one Ewe Lamb —the Females and Tup Lamb must be bred by Exhibitor—drawn from Classes* 127 *to* 130.

Nos. 1081, 1092, 1101, and 1112 Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.

CLASS 127. TUP, one Shear and over.—PREMIUMS, £10, £7, and £3.

1st	No. 1081	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks., " Southburn Baronet 3rd " (25,133).
2nd	No. 1082	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
3rd	No. 1079	Fraser, Hugh, Linton Burnfoot, Kelso.

CLASS 128. SHEARLING EWE or GIMMER.— PREMIUMS, £10, £5, and £2.

1st	No. 1092	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
2nd	No. 1090	Golightly, William, Whitelaw, Haddington.
3rd	No. 1089	Golightly, William, Whitelaw, Haddington.
V	No. 1091	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
H	No. 1087	Fraser, Hugh, Linton Burnfoot, Kelso.
C	No. 1085	Bosanquet, C. I. C., Rock, Alnwick, Northumberland.

CLASS 129. TUP LAMB.—PREMIUMS, £10, £5, and £2.

1st	No. 1096	Fraser, Hugh, Linton Burnfoot, Kelso.
2nd	No. 1101	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
3rd	No. 1094	Bosanquet, C. I. C., Rock, Alnwick, Northumberland.
V	No. 1097	Fraser, Hugh, Linton Burnfoot, Kelso.
H	No. 1098	Golightly, William, Whitelaw, Haddington.
C	No. 1099	Golightly, William, Whitelaw, Haddington.

CLASS 130. EWE LAMB.—PREMIUMS, £5, £3, and £2.

1st	No. 1112	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
2nd	No. 1111	Prince-Smith, Sir Prince, Bt., Southburn, Driffield, East Yorks.
3rd	No. 1109	Golightly, William, Whitelaw, Haddington.
V	No. 1104	Blythe, Charles, & Sons, Barberfield, Haddington.
H	No. 1113	Webb, Edward, & Sons, Ltd., Harcarse, Duns.
C	No. 1105	Bosanquet, C. I. C., Rock, Alnwick, Northumberland.

GOATS

PRESIDENT'S CHAMPION MEDAL for best Animal in the Goat Classes.

No. 1140 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marina " (BS 1520).

Reserve—No. 1122 Hendy, Mrs, Etherley, Bishop Auckland, (British Toggenburg), " Asteria " (BT 1047).

Challenge Cup, value 20 guineas, *for the best Female Goat in the Show.* Given by the late Lord Dewar, London.

No. 1140 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marina " (BS 1520).

The Competition for Goats is recognised by the British Goat Society, Roydon Road, Diss, Norfolk, which will give Challenge Certificates (qualifying for a Championship) :—

For the best Female Goat over two years that has borne a kid—

No. 1122 Hendy, Mrs, Etherley, Bishop Auckland, (British Toggenburg), " Asteria " (BT 1047).

For the best dual purpose Goat over two years that has borne a kid—

No. 1129 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marirose Q*Q*Q* " (BS 1197).

A Bronze Medal for the best Exhibit—

No. 1140 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marina " (BS 1520).

CLASS 131. FEMALE GOAT, any age, in Milk, entered in or eligible for the Toggenburg Section or the British Toggenburg or British Alpine Section or Register of the Herd-Book.—PREMIUMS, £3, £2, and £1.

1st No. 1122 Hendy, Mrs, Etherley, Bishop Auckland, (British Toggenburg), " Asteria " (BT 1047).
2nd No. 1124 Swan, Miss Elinor, The Neuk, 10 Midmar Drive, Edinburgh, (British Toggenburg), " Precious of Swanston Q** " (BTR 259).
3rd No. 1118 Forteviot, Dowager Lady, Galloway House, Garlieston, (British Alpine), " Dupplin Jubilate* " (BAR 500).
V No. 1119 Forteviot, Dowager Lady, Galloway House, Garlieston, (British Alpine), " Dupplin Kiteflyer " (BA 1299).

CLASS 132. FEMALE GOAT, any age, in Milk, entered in or eligible for the Saanen Section or the British Saanen Section or Register of the Herd-Book.—PREMIUMS, £3, £2, and £1.

1st No. 1126 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Matchmore Q*Q*** " (BS 1201).
2nd No. 1127 Steel-Maitland, Dowager Lady, Sauchieburn, Stirling, (British Saanen), " Sauchie Gracie " (BSR 647).

EXTRA STOCK.

The following received an award of £3 each :—

No. 1128 Hendy, Mrs, Etherley, Bishop Auckland, (Saanen), " Middleton Myrtle* " (S 287).
No. 1129 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marirose Q*Q*Q* " (BS 1197).

CLASS 133. FEMALE GOAT, any age, in Milk. Any other variety. —PREMIUMS, £3, £2, and £1.

1st No. 1130 Forteviot, Dowager Lady, Galloway House, Garlieston, (British), " Dupplin Keenness " (12,908).

EXTRA STOCK.

The following received an award of £3 :—

No. 1133 Hendy, Mrs, Etherley, Bishop Auckland, (Anglo-Nubian), " Jasmin of Coltishall " (AN 2397).

CLASS 134. GOATLING, over one but not exceeding two years, entered in or eligible for the Toggenburg Section or the British Toggenburg or British Alpine Section or Register of the Herd-Book.—PREMIUMS, £3, £2, and £1.

1st No. 1135 Forteviot, Dowager Lady, Galloway House, Garlieston, (British Alpine), " Dupplin Loveliness " (BA 1504).
2nd No. 1136 Hendy, Mrs, Etherley, Bishop Auckland, (British Alpine), " Etherley Teasel " (BA 1419).

CLASS 135. GOATLING, over one but not exceeding two years. Any other variety.—PREMIUMS, £3, £2, and £1.

1st No. 1140 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), " Mostyn Marina " (BS 1520).
2nd No. 1142 Steel-Maitland, Dowager Lady, Sauchieburn, Stirling, (British), " Sauchie Heather " (HB 13,158).
3rd No. 1139 Hendy, Mrs, Etherley, Bishop Auckland, (Saanen), " Etherley Silva " (S 444).

CLASS 136. FEMALE KID, not exceeding one year. Any variety.—PREMIUMS, £3, £2, and £1.

1st No. 1148 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), "Mostyn Maid Marion" (BSR 691).

2nd No. 1150 Swan, Miss Elinor, The Neuk, 10 Midmar Drive, Edinburgh, (British Toggenburg), "Charity of Swanston" (BTR 325).

3rd No. 1147 Hendy, Mrs, Etherley, Bishop Auckland, (British), "Etherley Kestrel" (13,457).

V No. 1143 Forteviot, Dowager Lady, Galloway House, Garlieston, (British Alpine), "Dupplin Mab" (BA 1596).

H No. 1151 Swan, Miss Elinor, The Neuk, 10 Midmar Drive, Edinburgh, (British Toggenburg), "Faith of Swanston" (BTR 323).

C No. 1146 Hendy, Mrs, Etherley, Bishop Auckland, (Saanen), "Etherley Jennifer" (S 515).

CLASS 137. MALE KID, not exceeding one year. Any variety.—PREMIUMS, £3, £2, and £1.

1st No. 1155 Robinson, John, Holme House, Etherley Bank, West Auckland, Co. Durham, (British Toggenburg), "Springwood Standard" (BT 1117).

2nd No. 1154 Hendy, Mrs, Etherley, Bishop Auckland, (British Toggenburg), "Murrayston Magnus" (BT 1116).

CLASS 138. MILKING COMPETITION, for quality, open to Classes 131, 132, and 133.—PREMIUMS, £3, £2, and £1.

1st No. 1129 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), "Mostyn Marirose Q*Q*Q*" (BS 1197).

2nd No. 1126 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), "Mostyn Matchmore Q*Q***" (BS 1201).

3rd No. 1128 Hendy, Mrs, Etherley, Bishop Auckland, (Saanen), "Middleton Myrtle*" (S 287).

V No. 1124 Swan, Miss Elinor, The Neuk, 10 Midmar Drive, Edinburgh, (British Toggenburg), "Precious of Swanston Q**" (BTR 259).

CLASS 139. MILKING COMPETITION, for quantity, open to Classes 131, 132, and 133.—PREMIUMS, £3, £2, and £1.

1st No. 1129 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), "Mostyn Marirose Q*Q*Q*" (BS 1197).

2nd No. 1118 Forteviot, Dowager Lady, Galloway House, Garlieston, (British Alpine), "Dupplin Jubilate*" (BAR 500).

3rd No. 1128 Hendy, Mrs, Etherley, Bishop Auckland, (Saanen), "Middleton Myrtle*" (S 287).

V No. 1126 Owen, Miss Mostyn, Spen House, Minskip, Boroughbridge, Yorks., (British Saanen), "Mostyn Matchmore Q*Q***" (BS 1201).

PIGS

LARGE WHITE.

PRESIDENT'S CHAMPION MEDAL
for best Large White Pig.

No. 1200 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Queen Mary 3rd" (259,642) (Ear No. 4872).

Reserve—No. 1156 Alexander, William, Gauze Farm, Bo'ness, "Gogar Prince Charlie 12th" (104,143) (Ear No. 5829).

Dundee Citizens' Perpetual Silver Challenge Cup, value about £50, *for the best Large White Pig, "Extra Stock" eligible to compete.* This Cup was presented by the Citizens of Dundee to commemorate the holding of the Society's Annual Show at Dundee in 1933.

No. 1200 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Queen Mary 3rd" (259,642) (Ear No. 4872).

Gold Medal, value £5 (or cash), *for best Large White Boar, "Extra Stock" eligible to compete.* Given by the National Pig-Breeders' Association.

No. 1156 Alexander, William, Gauze Farm, Bo'ness, "Gogar Prince Charlie 12th" (104,143) (Ear No. 5829).

Special Prizes for Groups of four Large White Pigs bred by Exhibitor. One Boar (at least) must be included in the Group, and not more than one entry to be selected from any one Class. "Extra Stock" eligible to compete.—PREMIUMS, £5, £3, and £2. Given by the National Pig-Breeders' Association.

1st Nos. 1158, 1184, 1200, and 1223 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12.

2nd Nos. 1167, 1179, 1216, and 1232 Ruddin, James, Wood Farm, Kirkby, near Liverpool.

3rd Nos. 1170, 1208, 1218, and 1235 Taylor, G. C., Moncur, Inchture, Perthshire.

CLASS 140. BOAR, born before 1938.—PREMIUMS, £8, £4, and £2.

1st No. 1156 Alexander, William, Gauze Farm, Bo'ness, "Gogar Prince Charlie 12th" (104,143) (Ear No. 5829).
2nd No. 1158 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Prince Charlie 22nd" (104,159) (Ear No. 6145).
3rd No. 1159 Elder, Captain A. J., City Mills, Dunfermline, "Wall Jubilee Lion" (106,505) (Ear No. 7957).
V No. 1161 Lawson, Thomas, Kirkforthar, Markinch, Fife, "Kirkforthar Kitchener" (104,761) (Ear No. 17).
H No. 1157 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Wall Lion 99th" (106,573) (Ear No. 7862).

EXTRA STOCK.

The following received an award of £2 :—

No. 1163 Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Prince Albert 2nd" (105,127) (Ear No. 655).

CLASS 141. BOAR, born in 1938 before 1st July.—PREMIUMS, £8, £4, and £2.

1st No. 1164 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Spalding Prince George 30th" (110,907) (Ear No. 8024).
2nd No. 1170 Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Prince George" (Ear No. 1029).
3rd No. 1169 Stodart, J. A., Kingston, North Berwick, "Westacre Kingmaker 106th" (111,807) (Ear No. 7860).
V No. 1167 Ruddin, James, Wood Farm, Kirkby, near Liverpool, "Aintree Armament" (Ear No. 385).
H No. 1168 Stodart, J. A., Kingston, North Berwick, "Dunmore Jock" (108,709) (Ear No. 1793).
C No. 1166 Lawson, Thomas, Kirkforthar, Markinch, Fife, "Kirkforthar Kitchener 3rd" (109,583) (Ear No. 121).

CLASS 142. BOAR, born in 1938 on or after 1st July.—PREMIUMS, £6, £4, and £2.

1st No. 1174 Elder, Captain A. J., City Mills, Dunfermline, "Touch Jubilee Lion" (Ear No. 181).
2nd No. 1178 Royal Edinburgh Hospital for Mental Disorders, West House, Morningside Place, Edinburgh 10, "Morningside Mandarin" (Ear No. 441).
3rd No. 1179 Ruddin, James, Wood Farm, Kirkby, Liverpool, "Aintree All Royal" (Ear No. 466).
V No. 1173 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Lion 8th" (Ear No. 7177).
H No. 1175 Elder, Captain A. J., City Mills, Dunfermline, "Adderley Majesty 58th" (Ear No. 1931).
C No. 1180 St Luke's Hospital (Committee of Visitors), Middlesbrough, Yorks., "Linthorpe Duke 6th" (Ear No. 1461).

CLASS 143. BOAR, born in 1939.—PREMIUMS, £6, £3, and £1.

1st	No. 1185	Elder, Captain A. J., City Mills, Dunfermline, "Touch Jubilee Lion 8th" (Ear No. 328).
2nd	No. 1184	Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Lion 9th" (Ear No. 7655).
3rd	No. 1186	Ferguson, William, Bankhead of Raith, Kirkcaldy, (Ear No. 382).
V	No. 1189	M'Naughton, Finlay, Rogerfield, Baillieston, Glasgow, "Rogerfield Mandate 3rd" (Ear No. 646).
H	No. 1190	M'Naughton, Finlay, Rogerfield, Baillieston, Glasgow, "Rogerfield Mandate 4th" (Ear No. 647).
C	No. 1196	Stodart, J. A., Kingston, North Berwick, "Kingston Sir Nigel" (Ear No. 663).

Gold Medal, value £5 (or cash), *for best Large White Sow, "Extra Stock" eligible to compete.* Given by the National Pig-Breeders' Association.

No. 1200	Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Queen Mary 3rd" (259,642) (Ear No. 4872).

CLASS 144. SOW, born before 1938.—PREMIUMS, £8, £4, and £2.

1st	No. 1200	Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Queen Mary 3rd" (259,642) (Ear No. 4872).
2nd	No. 1206	Ruddin, James, Wood Farm, Kirkby, Liverpool, "Spalding Queen 22nd" (275,580) (Ear No. 6086).
3rd	No. 1208	Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Kate 14th" (261,742) (Ear No. 505).
V	No. 1202	Lawson, Thomas, Kirkforthar, Markinch, Fife, "Kirkforthar Blackberry 6th" (272,764) (Ear No. 11).
H	No. 1205	Royal Edinburgh Hospital for Mental Disorders, West House, Morningside Place, Edinburgh 10, "Morningside Mina" (223,992) (Ear No. 93).
C	No. 1201	Elder, Captain A. J., City Mills, Dunfermline, "Touch Lady Topsie 26th" (Ear No. 1774).

CLASS 145. SOW, born in 1938 before 1st July.— PREMIUMS, £8, £4, and £2.

1st	No. 1211	Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Spalding Model" (287,516) (Ear No. 8003).
2nd	No. 1216	Ruddin, James, Wood Farm, Kirkby, Liverpool, "Aintree Molly" (279,236) (Ear No. 352).
3rd	No. 1219	Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Kate 27th" (Ear No. 1034).
V	No. 1218	Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Kate 28th" (Ear No. 1003).
H	No. 1215	Royal Edinburgh Hospital for Mental Disorders, West House, Morningside Place, Edinburgh 10, (Ear No. 395).
C	No. 1217	St Luke's Hospital (Committee of Visitors), Middlesbrough, Yorks., "Linthorpe Increase 43rd" (Ear No. 1339).

CLASS 146. SOW, born in 1938 on or after 1st July.—PREMIUMS, £6, £4, and £2.

1st No. 1222 Cavaghan & Gray, Ltd., Harraby, Carlisle, "Harraby Molly 26th" (Ear No. 1099).
2nd No. 1232 Ruddin, James, Wood Farm, Kirkby, Liverpool, "Aintree Queen Mary" (Ear No. 474).
3rd No. 1233 St Luke's Hospital (Committee of Visitors), Middlesbrough, Yorks., "Linthorpe Queen Mary 5th" (Ear No. 1570).
V No. 1223 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Blackberry 70th" (Ear No. 7191).
H No. 1224 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Blackberry 71st" (Ear No. 7192).
C No. 1235 Taylor, G. C., Moncur, Inchture, Perthshire, "Moncur Blossom 14th" (Ear No. 1113).

CLASS 147. SOW, born in 1939.—PREMIUMS, £6, £3, and £1.

1st No. 1251 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, "Wroot Dainty Girl 4th" (Ear No. 2090).
2nd No. 1249 Stodart, J. A., Kingston, North Berwick, "Kingston Cleopatra 5th" (Ear No. 688).
3rd No. 1243 Royal Edinburgh Hospital for Mental Disorders, West House, Morningside Place, Edinburgh 10, (Ear No. 468).
V No. 1241 Lawson, Thomas, Kirkforthar, Markinch, Fife, "Kirkforthar Blackberry 30th" (Ear No. 300).
H No. 1237 Cowper, The Executor of the late John E. B., Gogar Mains, Edinburgh 12, "Gogar Hilda 12th" (Ear No. 7663).
C No. 1240 Ferguson, William, Bankhead of Raith, Kirkcaldy, (Ear No. 384).

LARGE BLACK.

PRESIDENT'S CHAMPION MEDAL
for best Large Black Pig.

No. 1272 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, "Thorn Matilda 2nd" (S 980) (Ear No. 158).

Reserve—No. 1255 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Good Boy" (P 299).

Silver Medal *for the best Large Black Boar.* Given by the Large Black Pig Society.

No. 1255 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Good Boy" (P 299).

CLASS 148. BOAR, born before 1939.—PREMIUMS, £8, £4, and £2.

1st No. 1255 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Good Boy" (P 299).
2nd No. 1252 Elder, J. S., East Bearford, Haddington, "Treluckey Scotchman" (P 149).
3rd No. 1254 Elder, J. S., East Bearford, Haddington, "Bearford Streamline" (S 277).
V No. 1253 Elder, J. S., East Bearford, Haddington, "Patshull Leader 34th" (R 183).
H No. 1256 Moore, Ralph, Ingleby Hill, Ingleby Barwick, Stockton-on-Tees, "Upwood Night Boy 3rd" (P 159).

CLASS 149. BOAR, born in 1939.—PREMIUMS, £6, £3, and £1.

1st No. 1260 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Realisation" (T 33).
2nd No. 1261 Moore, Ralph, Ingleby Hill, Ingleby Barwick, Stockton-on-Tees, "Ingleby Night Boy 4th" (T 43).
3rd No. 1258 Elder, J. S., East Bearford, Haddington, "Bearford Jasper" (T 71).
V No. 1259 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Model 3rd" (T 31).

Silver Medal *for the best Large Black Sow.* Given by the Large Black Pig Society.

No. 1272 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, "Thorn Matilda 2nd" (S 980) (Ear No. 158).

CLASS 150. SOW, born before 1938.—PREMIUMS, £8, £4, and £2.

1st No. 1262 Elder, J. S., East Bearford, Haddington, "Bearford Moonlight 8th" (P 1340).
2nd No. 1263 Elder, J. S., East Bearford, Haddington, "Bearford Jill 30th" (R 1298).
3rd No. 1265 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Bangle 15th" (N 776).
V No. 1267 Moore, Ralph, Ingleby Hill, Ingleby Barwick, Stockton-on-Tees, "Elsted Marnickim 4th" (R 794).

CLASS 151. SOW, born in 1938.—PREMIUMS, £8, £4, and £2.

1st No. 1272 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, "Thorn Matilda 2nd" (S 980) (Ear No. 158).
2nd No. 1271 Gilbert, F. W., The Manor, Chellaston, Derby, "Wolsey Victress 5th" (S 98).
3rd No. 1269 Elder, J. S., East Bearford, Haddington, "Bearford Jill 31st" (S 1044).
V No. 1270 Elder, J. S., East Bearford, Haddington, "Bearford Moonlight 10th" (S 1046).
H No. 1273 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, "Thorn Matilda 3rd" (S 982) (Ear No. 159).
C No. 1268 Elder, J. S., East Bearford, Haddington, "Chellaston Exclusive" (S 134).

CLASS 152. SOW, born in 1939.—PREMIUMS, £6, £3, and £1.

1st No. 1278 Moore, Ralph, Ingleby Hill, Ingleby Barwick, Stockton-on-Tees, "Ingleby Belle 38th" (T 88).
2nd No. 1275 Elder, J. S., East Bearford, Haddington, "Bearford Jill 32nd" (T 214).
3rd No. 1276 Gilbert, F. W., The Manor, Chellaston, Derby, "Chellaston Melody 4th" (T 64).
V No. 1277 Moore, Ralph, Ingleby Hill, Ingleby Barwick, Stockton-on-Tees, "Ingleby Fancy 44th" (T 70).

ESSEX.

PRESIDENT'S CHAMPION MEDAL for best Essex Pig.

No. 1284 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Lady 3rd " (30,884).

Reserve—No. 1292 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, " Hatfield Alfreda 9th " (33,980) (Ear No. 8).

Silver Medal *for the best Essex Pig.* Given by the Essex Pig Society.

No. 1284 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Lady 3rd " (30,884).

CLASS 153. BOAR, born in 1938 on or after 1st July.—PREMIUMS, £6, £3, and £1.

1st No. 1281 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Emblem 17th " (6059) (Ear No. 158).
2nd No. 1280 Cavaghan & Gray, Ltd., Harraby, Carlisle, " Greenwood Kaiser 2nd " (5995) (Ear No. 602).
3rd No. 1279 Bowser, Harold H., Swineshead House, Boston, Lincs., " Magdalen Duke 2nd " (6021) (Ear No. 456).

CLASS 154. SOW, born in 1938.—PREMIUMS, £6, £3, and £1.

1st No. 1284 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Lady 3rd " (30,884).
2nd No. 1285 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Carrie 21st " (33,950) (Ear No. 225).
3rd No. 1283 Cavaghan & Gray, Ltd., Harraby, Carlisle, " Benton Laura 30th " (33,118) (Ear No. 144).
V No. 1282 Bowser, Harold H., Swineshead House, Boston, Lincs., " Magdalen Pride 130th " (30,984) (Ear No. 61).
H No. 1286 Robertson, D. G., Mains of Mause, Blairgowrie, " Chilton Pansy 17th " (31,894) (Ear No. 220).

CLASS 155. SOW, born in 1939.—PREMIUMS, £6, £3, and £1.

1st No. 1292 Vint, Wyndham T., Thorn Cottage, Wroot, Doncaster, " Hatfield Alfreda 9th " (33,980) (Ear No. 8).
2nd No. 1287 Bowser, Harold H., Swineshead House, Boston, Lincs., " Magdalen Diamond " (33,878) (Ear No. 77).
3rd No. 1288 Cavaghan & Gray, Ltd., Harraby, Carlisle, " Greenwood Aileen 3rd " (Ear No. 209).
V No. 1289 Cavaghan & Gray, Ltd., Harraby, Carlisle, " Greenwood Aileen 4th " (Ear No. 210).
H No. 1291 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Cherry 10th " (33,866) (Ear No. 219).
C No. 1290 Dennis, W., & Sons, Ltd., Kirton, Boston, Lincs., " Kirton Cissie 13th " (33,870) (Ear No. 206).

POULTRY

First Premium—Twenty Shillings. Second Premium—Ten Shillings. In each Class in which there are four or more entries a Third Prize of Five Shillings may be awarded, provided there is sufficient merit in the pens.

Champion Challenge Silver Salver, value £30, *for the best exhibit in the Poultry Classes*—given by the late Lord Dewar. Messrs W. Binnie & Son, Garth House, Denny, who won the Salver outright in 1938, have kindly re-presented the Salver to the Society as a Perpetual Challenge Trophy.

No. 143 Wilson, T. G., Carbeth Home Farm, Balfron Station.

Champion Silver Medals are offered as follows :—

1. *Best Cock, any Variety.*

No. 143 Wilson, T. G., Carbeth Home Farm, Balfron Station.

2. *Best Hen, any Variety.*

No. 228 Armstrong, Joseph, Barclose, Scaleby, Carlisle.

3. *Best Cockerel, any Variety.*

No. 109 Wharton, John, Honeycott Farm, Hawes, Yorks.

4. *Best Pullet, any Variety.*

No. 75 Orr, James D., Service Station, Gargunnock, Stirling.

5. *Best Bantam, any Variety.*

No. 250 M'Glasson, John, Newbie Villa, Annan.

6. *Best Waterfowl.*

No. 448 Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

7. *Best Turkey.*

No. 501 Andrew, Mrs J., South Tulloford, Oldmeldrum.

8. *Best Utility Bird* (*Classes* 82-97).

No. 337 Binnie, W., & Son, Garth House, Denny.

CLASS 1. LEGHORN—White—Cock.

1st	No. 2	Binnie, W., & Son, Garth House, Denny.
2nd	No. 5	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 1	Bell, Charles, Kingholm Quay, Dumfries.
V	No. 4	Campbell, Colin, Garavoirne, Campbeltown.
H	No. 3	Campbell, Colin, Garavoirne, Campbeltown.

CLASS 2. LEGHORN—White—Hen.

1st	No. 13	Parker, John, Sornhill, Galston, Ayrshire.
2nd	No. 11	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 9	Binnie, W., & Son, Garth House, Denny.
V	No. 8	Bell, Charles, Kingholm Quay, Dumfries.
H	No. 14	Russell, John, Tinto View, Pettinain, Lanark.

CLASS 3. LEGHORN—White—Cockerel.

1st	No. 16	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
2nd	No. 15	Binnie, W., & Son, Garth House, Denny.

CLASS 4. LEGHORN—White—Pullet.

1st	No. 20	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
2nd	No. 18	Binnie, W., & Son, Garth House, Denny.
V	No. 19	Guthrie, P. F., South Croft, Auchterarder.

CLASS 5. LEGHORN—Any other Colour—Cock.

1st	No. 22	M'Pherson, R., Drumboy, Strathaven (Brown).
2nd	No. 24	M'Pherson, R., Drumboy, Strathaven (Brown).
3rd	No. 21	M'Pherson, R., Drumboy, Strathaven (Brown).
V	No. 23	M'Pherson, R., Drumboy, Strathaven (Brown).

CLASS 6. LEGHORN—Any other Colour—Hen.

1st	No. 29	Kirkwood, R. A., Camelon Hotel, Falkirk (Brown).
2nd	No. 32	Ross, J. C., Stirling Road, Larbert (Black).
3rd	No. 31	Ross, J. C., Stirling Road, Larbert (Black).
V	No. 27	Brown, Charles D., Ivybank, Kintore (Brown).
H	No. 26	Appleton, John S., 92 Tile Hill Lane, Coventry (Black).

CLASS 7. LEGHORN—Any other Colour—Cockerel.

1st	No. 35	Livingstone, John, Peel Hill, Strathaven (Brown).
2nd	No. 34	Callon, James, 9 Callon Avenue, Redgate, St Helen's, Lancs. (Brown).

CLASS 8. LEGHORN—Any other Colour—Pullet.

1st	No. 36	Kirkwood, R. A., Camelon Hotel, Falkirk (Brown).
2nd	No. 37	Livingstone, John, Peel Hill, Strathaven (Black).

CLASS 9. MINORCA—Cock.

1st	No. 38	Binnie, W., & Son, Garth House, Denny.
2nd	No. 39	Binnie, W., & Son, Garth House, Denny.

CLASS 10. MINORCA—Hen.

1st	No. 42	Binnie, W., & Son, Garth House, Denny.
2nd	No. 45	M'Pherson, John, Meadowhead, Carluke.
3rd	No. 46	Russell, John, Tinto View, Pettinain, Lanark.
V	No. 44	Graham, John, Kirkfield, Lanark.
H	No. 43	Graham, John, Kirkfield, Lanark.

CLASS 11. MINORCA—Cockerel.

1st	No. 47	Binnie, W., & Son, Garth House, Denny.

CLASS 12. MINORCA—Pullet.

1st	No. 52	Graham, John, Kirkfield, Lanark.
2nd	No. 51	Dalrymple, John, & Son, Meadowview, Leslie, Fife.
3rd	No. 53	Russell, John, Tinto View, Pettinain, Lanark.
V	No. 50	Binnie, W., & Son, Garth House, Denny.

CLASS 13. SCOTCH GREY—Cock.

1st	No. 54	Carswell, John, Hazel Bank, 167 Graham's Road, Falkirk.
2nd	No. 56	Ramsay, William, Busbie Farm, Crosshouse, Kilmarnock.

CLASS 14. SCOTCH GREY—Hen.

1st	No. 58	Kirkwood, R. A., Camelon Hotel, Falkirk.
2nd	No. 60	Ramsay, William, Busbie Farm, Crosshouse, Kilmarnock.
3rd	No. 59	Ramsay, William, Busbie Farm, Crosshouse, Kilmarnock.
V	No. 57	Carswell, John, Hazel Bank, 167 Graham's Road, Falkirk.

CLASS 15. SCOTCH GREY—Cockerel.

(No award.)

CLASS 16. SCOTCH GREY—Pullet.

1st	No. 62	Carswell, John, Hazel Bank, 167 Graham's Road, Falkirk.
2nd	No. 64	Ramsay, William, Busbie Farm, Crosshouse, Kilmarnock.

CLASS 17. PLYMOUTH ROCK—Barred—Cock.

1st	No. 67	Orr, James D., Service Station, Gargunnock, Stirling.
2nd	No. 65	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.

CLASS 18. PLYMOUTH ROCK—Barred—Hen.

1st	No. 70	Orr, James D., Service Station, Gargunnock, Stirling.
2nd	No. 68	Brown, Charles D., Ivybank, Kintore.
3rd	No. 69	Morgan, William, Balcurvie, Windygates.

CLASS 19. PLYMOUTH ROCK—Barred—Cockerel.

1st	No. 74	Orr, James D., Service Station, Gargunnock, Stirling.
2nd	No. 72	Brown, Charles D., Ivybank, Kintore.

CLASS 20. PLYMOUTH ROCK—Barred—Pullet.

1st	No. 75	Orr, James D., Service Station, Gargunnock, Stirling.
2nd	No. 76	Orr, James D., Service Station, Gargunnock, Stirling.

CLASS 21. PLYMOUTH ROCK—Any other Colour—Cock or Cockerel.

1st	No. 80	Ronald, John R., Dorrator, Milnathort (Buff).
2nd	No. 78	Orr, James D., Service Station, Gargunnock, Stirling (White).
3rd	No. 79	Orr, James D., Service Station, Gargunnock, Stirling (Buff).

CLASS 22. PLYMOUTH ROCK—Any other Colour—Hen or Pullet.

1st	No. 82	Orr, James D., Service Station, Gargunnock, Stirling (Buff).
2nd	No. 81	Morgan, William, Balcurvie, Windygates (Buff).

CLASS 23. ORPINGTON—Black—Cock or Cockerel.

1st	No. 86	Watts, Colonel Humphrey, Haslington Hall, Crewe.
2nd	No. 84	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.
V	No. 85	Orr, James D., Service Station, Gargunnock, Stirling.

CLASS 24. ORPINGTON—Black—Hen or Pullet.

1st	No. 87	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.
2nd	No. 88	Orr, James D., Service Station, Gargunnock, Stirling.
V	No. 89	Watts, Colonel Humphrey, Haslington Hall, Crewe.

CLASS 25. ORPINGTON—Any other Colour—Cock or Cockerel.

1st	No. 90	Orr, James D., Service Station, Gargunnock, Stirling (Buff).

CLASS 26. ORPINGTON—Any other Colour—Hen or Pullet.

1st	No. 92	Orr, James D., Service Station, Gargunnock, Stirling (Blue).
2nd	No. 91	Orr, James D., Service Station, Gargunnock, Stirling (Buff).
V	No. 93	Ronald, John, Tunnoch, Maybole (Buff).

CLASS 27. WYANDOTTE—White—Cock.

1st	No. 95	Binnie, W., & Son, Garth House, Denny.
2nd	No. 97	M'Pherson, John, Meadowhead, Carluke.
3rd	No. 96	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
V	No. 99	Wharton, John, Honeycott Farm, Hawes, Yorks.

CLASS 28. WYANDOTTE—White—Hen.

1st	No. 100	Barton, John, Burtree Farm, Hutton Sessay, Thirsk, Yorks.
2nd	No. 102	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 104	Wharton, John, Honeycott Farm, Hawes, Yorks.
V	No. 101	Binnie, W., & Son, Garth House, Denny.
H	No. 103	M'Pherson, John, Meadowhead, Carluke.

CLASS 29. WYANDOTTE—White—Cockerel.

1st	No. 109	Wharton, John, Honeycott Farm, Hawes, Yorks.
2nd	No. 105	Barton, John, Burtree Farm, Hutton Sessay, Thirk, Yorks.
3rd	No. 106	Binnie, W., & Son, Garth House, Denny.
V	No. 107	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
H	No. 108	Russell, John, Tinto View, Pettinain, Lanark.

CLASS 30. WYANDOTTE—White—Pullet.

1st	No. 112	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
2nd	No. 110	Barton, John, Burtree Farm, Hutton Sessay, Thirsk, Yorks.
3rd	No. 111	Binnie, W., & Son, Garth House, Denny.
V	No. 114	Wharton, John, Honeycott Farm, Hawes, Yorks.
H	No. 113	Russell, John, Tinto View, Pettinain, Lanark.

CLASS 31. WYANDOTTE—Partridge or Columbian—Cock or Cockerel.

1st	No. 117	Wharton, John, Honeycott Farm, Hawes, Yorks. (Partridge).
2nd	No. 115	Brown, Charles D., Ivybank, Kintore (Partridge).

CLASS 32. WYANDOTTE—Partridge or Columbian—Hen or Pullet.

1st	No. 119	Wharton, John, Honeycott Farm, Hawes, Yorks. (Partridge).
2nd	No. 118	Watts, Colonel Humphrey, Haslington Hall, Crewe (Partridge).

CLASS 33. WYANDOTTE—Any other Colour—Cock or Cockerel.

1st	No. 120	Spensley, Herbert, Oaks Farm, Menston-in-Wharfedale (Silver).

CLASS 34. WYANDOTTE—Any other Colour—Hen or Pullet.

1st	No. 123	Watts, Colonel Humphrey, Haslington Hall, Crewe (Gold-laced).
2nd	No. 122	Spensley, Herbert, Oaks Farm, Menston-in-Wharfedale (Silver).
V	No. 121	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Silver).

CLASS 35. RHODE ISLAND RED—Cock.

1st	No. 128	Morgan, William, Balcurvie, Windygates.
2nd	No. 124	Brown, Charles D., Ivybank, Kintore.
3rd	No. 129	Murray, David, County Cottages, Markinch.
V	No. 127	M'Pherson, John, Meadowhead, Carluke.
H	No. 126	M'Pherson, John, Meadowhead, Carluke.

CLASS 36. RHODE ISLAND RED—Hen.

1st	No. 130	Brown, Charles D., Ivybank, Kintore.
2nd	No. 131	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 133	M'Pherson, John, Meadowhead, Carluke.

CLASS 37. RHODE ISLAND RED—Cockerel.

1st	No. 135	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 136	Scott, Alexander, Cockridge View, Lanark.

CLASS 38. RHODE ISLAND RED—Pullet.

1st	No. 138	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 137	Orr, James D., Service Station, Gargunnock, Stirling.

CLASS 39. SUSSEX—Light—Cock.

1st	No. 143	Wilson, T. G., Carbeth Home Farm, Balfron Station.
2nd	No. 139	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 142	Wilson, T. G., Carbeth Home Farm, Balfron Station.
V	No. 141	Wilson, T. G., Carbeth Home Farm, Balfron Station.
H	No. 140	White, James, Huntlywood Farm, Gordon.

CLASS 40. SUSSEX—Light—Hen.

1st	No. 149	Wilson, T. G., Carbeth Home Farm, Balfron Station.
2nd	No. 147	Wilson, T. G., Carbeth Home Farm, Balfron Station.
3rd	No. 144	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
V	No. 148	Wilson, T. G., Carbeth Home Farm, Balfron Station
H	No. 146	White, James, Huntlywood Farm, Gordon.

CLASS 41. SUSSEX—Light—Cockerel.

1st	No. 151	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
2nd	No. 153	Wilson, T. G., Carbeth Home Farm, Balfron Station.
3rd	No. 152	Wilson, T. G., Carbeth Home Farm, Balfron Station.
V	No. 154	Wilson, T. G., Carbeth Home Farm, Balfron Station.
H	No. 150	Barton, John, Burtree Farm, Hutton Sessay, Thirsk, Yorks.

CLASS 42. SUSSEX—Light—Pullet.

1st	No. 156	Guthrie, James, East Doura, Craigie, Kilmarnock.
2nd	No. 160	Wilson, T. G., Carbeth Home Farm, Balfron Station.
3rd	No. 159	Wilson, T. G., Carbeth Home Farm, Balfron Station.
V	No. 157	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
H	No. 158	Wilson, T. G., Carbeth Home Farm, Balfron Station.
C	No. 155	Barton, John, Burtree Farm, Hutton Sessay, Thirsk, Yorks.

CLASS 43. SUSSEX—Any other Variety—Cock or Cockerel.

1st	No. 161	Cooper, Robert, Lamancha, West Linton (Buff).

CLASS 44. SUSSEX—Any other Variety—Hen or Pullet.

1st	No. 162	Cooper, Robert, Lamancha, West Linton (Buff).
2nd	No. 163	Morgan, William, Balcurvie, Windygates (White).

CLASS 45. DORKING—Coloured—Cock.

1st	No. 164	Major, A. J., Ditton, Langley, Bucks.

CLASS 46. DORKING—Coloured—Hen.

1st	No. 165	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 166	Major, A. J., Ditton, Langley, Bucks.

CLASS 47. DORKING—Coloured—Cockerel or Pullet.

1st	No. 167	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 168	Major, A. J., Ditton, Langley, Bucks.

CLASS 48. DORKING—Silver Grey—Cock.

1st	No. 169	Bryce, William, Snaigow, Murthly.
2nd	No. 170	Cruickshank, A., Wester Leys, Lessendrum, Huntly.
V	No. 171	Major, A. J., Ditton, Langley, Bucks.

CLASS 49. DORKING—Silver Grey—Hen.

1st	No. 172	Bryce, William, Snaigow, Murthly.
2nd	No. 173	Cruickshank, A., Wester Leys, Lessendrum, Huntly.
V	No. 174	Major, A. J., Ditton, Langley, Bucks.

CLASS 50. DORKING—Silver Grey—Cockerel.

1st	No. 176	Major, A. J., Ditton, Langley, Bucks.
2nd	No. 175	Major, A. J., Ditton, Langley, Bucks.

CLASS 51. DORKING—Silver Grey—Pullet.

1st	No. 177	Major, A. J., Ditton, Langley, Bucks.

CLASS 52. SCOTS DUMPY—Cock.

1st	No. 178	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 179	Kerr, J. E., of Harviestoun, Dollar.
3rd	No. 180	Kerr, J. E., of Harviestoun, Dollar.

CLASS 53. SCOTS DUMPY—Hen.

1st	No. 184	Kerr, J. E., of Harviestoun, Dollar.
2nd	No. 182	Brown, J. W., Rosehill, Summerston, Glasgow.
3rd	No. 183	Kerr, J. E., of Harviestoun, Dollar.
V	No. 187	Major, A. J., Ditton, Langley, Bucks.
H	No. 185	Kerr, J. E., of Harviestoun, Dollar.
C	No. 186	Laidler, James, 175 Muirdrum Avenue, Cardonald, Glasgow.

CLASS 54. SCOTS DUMPY—Cockerel or Pullet.

1st	No. 191	Laidler, James, 175 Muirdrum Avenue, Cardonald, Glasgow.
2nd	No. 189	Kerr, J. E., of Harviestoun, Dollar.
3rd	No. 188	Kerr, J. E., of Harviestoun, Dollar.

CLASS 55. BARNEVELDER—Cock.

1st	No. 193	Binnie, W., & Son, Garth House, Denny.
2nd	No. 194	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.
3rd	No. 196	Morgan, William, Balcurvie, Windygates.
V	No. 195	Campbell, Colin, Garavoirne, Campbeltown.
H	No. 197	Whitton, Arthur, Aiskew, Bedale, Yorks.

CLASS 56. BARNEVELDER—Hen.

1st	No. 199	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.
2nd	No. 198	Binnie, W., & Son, Garth House, Denny.
3rd	No. 200	Morgan, William, Balcurvie, Windygates.
V	No. 201	Whitton, Arthur, Aiskew, Bedale, Yorks.

CLASS 57. BARNEVELDER—Cockerel.

1st	No. 204	Morgan, William, Balcurvie, Windygates.
2nd	No. 205	Whitton, Arthur, Aiskew, Bedale, Yorks.

CLASS 58. BARNEVELDER—Pullet.

1st	No. 209	Morgan, William, Balcurvie, Windygates.
2nd	No. 206	Binnie, W., & Son, Garth House, Denny.
3rd	No. 210	Whitton, Arthur, Aiskew, Bedale, Yorks.
V	No. 207	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.

CLASS 59. INDIAN GAME—Cock.

1st	No. 213	M'Pherson, John, Meadowhead, Carluke.

CLASS 60. INDIAN GAME—Hen.

1st	No. 217	Pettigrew, John, Moss View, Dalmellington.
2nd	No. 216	M'Pherson, John, Meadowhead, Carluke.
3rd	No. 214	Black, William A. P., Croftfoot, Old Polmont, Falkirk.

CLASS 61. INDIAN GAME—Cockerel.

1st	No. 218	Black, William A. P., Croftfoot, Old Polmont, Falkirk.

CLASS 62. INDIAN GAME—Pullet.

1st	No. 220	Black, William A. P., Croftfoot, Old Polmont, Falkirk.

CLASS 63. OLD ENGLISH GAME—Cock.

1st	No. 223	Blaylock, J. W., Laversdale Lane, Irthington, Carlisle.
2nd	No. 222	Armstrong, Joseph, Barclose, Scaleby, Carlisle.
3rd	No. 227	Watts, Colonel Humphrey, Haslington Hall, Crewe.
V	No. 226	Slater, A., The Old Vicarage, Lythe, Whitby, Yorks.
H	No. 224	Neilson, David, 61 Paterson Park, Leslie, Fife.

CLASS 64. OLD ENGLISH GAME—Hen.

1st	No. 228	Armstrong, Joseph, Barclose, Scaleby, Carlisle.
2nd	No. 232	Watts, Colonel Humphrey, Haslington Hall, Crewe.
3rd	No. 231	Slater, A., The Old Vicarage, Lythe, Whitby, Yorks.

CLASS 65. OLD ENGLISH GAME—Cockerel.

1st	No. 236	Watts, Colonel Humphrey, Haslington Hall, Crewe.
2nd	No. 233	Armstrong, Joseph, Barclose, Scaleby, Carlisle.
3rd	No. 235	Kirkwood, R. A., Camelon Hotel, Falkirk.
V	No. 234	Blaylock, J. W., Laversdale Lane, Irthington, Carlisle.

CLASS 66. OLD ENGLISH GAME—Pullet.

1st	No. 237	Armstrong, Joseph, Barclose, Scaleby, Carlisle.
2nd	No. 238	Kirkwood, R. A., Camelon Hotel, Falkirk.

CLASS 67. BANTAM—Game—Old English Spangle—Cock.

1st	No. 244	M'Glasson, John, Newbie Villa, Annan.
2nd	No. 246	Morgan, William, Balcurvie, Windygates.
3rd	No. 243	Inglis, A. C., & Son, 76 Balfour Street, Kirkcaldy.
V	No. 242	Inglis, A. C., & Son, 76 Balfour Street, Kirkcaldy.
H	No. 241	Davie, Andrew, Arlary Crossing, Mawcarse, Milnathort.
C	No. 245	M'Glasson, John, Newbie Villa, Annan.
C	No. 247	Stuart, A. D., The Brighouse, Bathgate.

CLASS 68. BANTAM—Game—Old English Spangle—Hen.

1st	No. 250	M'Glasson, John, Newbie Villa, Annan.
2nd	No. 252	Morgan, William, Balcurvie, Windygates.
3rd	No. 251	M'Glasson, John, Newbie Villa, Annan.
V	No. 249	Inglis, A. C., & Son, 76 Balfour Street, Kirkcaldy.
H	No. 248	Inglis, A. C., & Son, 76 Balfour Street, Kirkcaldy.
C	No. 253	Stuart, A. D., The Brighouse, Bathgate.

CLASS 69. BANTAM—Game—Old English any other colour—Cock.

1st	No. 257	Morgan, William, Balcurvie, Windygates (Furness).
2nd	No. 255	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom (Black-Red).
3rd	No. 254	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Wheaten).
V	No. 258	Mowbray, John, Croft, Leslie, Fife (Black-Red).

CLASS 70. BANTAM—Game—Old English, any other colour—Hen.

1st	No. 259	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Blue).
2nd	No. 265	Morgan, William, Balcurvie, Windygates (Furness).
3rd	No. 261	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom (Black-Red).
V	No. 262	Kirkwood, R. A., Camelon Hotel, Falkirk (Black).
H	No. 264	Moore, Douglas, Ingleby Barwick, Stockton-on-Tees (Blue).
C	No. 260	Davie, Andrew, Arlary Crossing, Mawcarse, Milnathort (Black).

CLASS 71. BANTAM—Game—Old English—Cockerel or Pullet.

1st	No. 268	Kirkwood, R. A., Camelon Hotel, Falkirk (Black).
2nd	No. 266	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Blue).
V	No. 267	Hamilton, Thomas, Kirkton Kilns, Bathgate (Spangle).

CLASS 72. BANTAM—Game—Modern—Cock.

1st	No. 271	Pelling, Andrew, Glencoyle, Stonehouse.
2nd	No. 270	Pelling, Andrew, Glencoyle, Stonehouse.
3rd	No. 269	Paton, Gavin, 112 Glasgow Road, Corstorphine, Edinburgh.
V	No. 274	Watt, F. A., Solicitor, Banff.
H	No. 273	Scott, Alexander, Cockridge View, Lanark.

CLASS 73. BANTAM—Game—Modern—Hen.

1st	No. 277	Pelling, Andrew, Glencoyle, Stonehouse.
2nd	No. 275	Delaney, James, & Son, Gateside, Fife.
3rd	No. 281	Watt, F. A., Solicitor, Banff.
V	No. 280	Scott, Alexander, Cockridge View, Lanark.

CLASS 74. BANTAM—Other than Game—Cock.

1st	No. 283	Dalrymple, John, & Son, Meadowview, Leslie, Fife (Minorca).
2nd	No. 282	Binnie, W., & Son, Garth House, Denny (Wyandotte, White).
3rd	No. 290	Watson, A. C., Gilmerton Dairy, Gilmerton (Sebright).
V	No. 287	Kirkwood, R. A., Camelon Hotel, Falkirk (Wyandotte, White).
H	No. 288	Mitchell, W. G., Newstead, Melrose (Ancona).
C	No. 289	Patterson, John, Athelstaneford Mains, Drem (Sebright).

CLASS 75. BANTAM—Other than Game—Hen.

1st	No. 292	Binnie, W., & Son, Garth House, Denny (Wyandotte, White).
2nd	No. 297	M'Howat, William, Muckcroft, Lennoxtown (Pekin, Black).
3rd	No. 295	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Sebright).
V	No. 299	Paton, Gavin, 112 Glasgow Road, Corstorphine, Edinburgh (Rosecomb, Black).
H	No. 296	Kirkwood, R. A., Camelon Hotel, Falkirk (Wyandotte, White).
C	No. 298	Otterson Brothers, Middlerigg, Sundrum, Ayr (Rosecomb, Black).

CLASS 76. BANTAM—Any Variety other than Old English Game —Cockerel.

1st	No. 303	Binnie, W., & Son, Garth House, Denny (Wyandotte, White).
2nd	No. 305	Delaney, James, & Son, Gateside, Fife (Modern Game).
3rd	No. 307	Kirkwood, R. A., Camelon Hotel, Falkirk (Wyandotte, White).
V	No. 304	Delaney, James, & Son, Gateside, Fife (Modern Game).

CLASS 77. BANTAM—Any Variety other than Old English Game —Pullet.

1st	No. 312	Delaney, James, & Son, Gateside, Fife (Modern Game).
2nd	No. 313	Kirkwood, R. A., Camelon Hotel, Falkirk (Wyandotte, White).
3rd	No. 310	Binnie, W., & Son, Garth House, Denny (Wyandotte, White).
V	No. 311	Delaney, James, & Son, Gateside, Fife (Modern Game).
H	No. 314	M'Howat, William, Muckcroft, Lennoxtown (Pekin, Black).

CLASS 78. ANY OTHER RECOGNISED BREED OF POULTRY —Cock.

1st	No. 317	Johnstone, D., & Son, Station Road, Windygates (Cochin, Partridge).
2nd	No. 315	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom (Old English Pheasant).
3rd	No. 319	Miller, Robert C., & Son, Boghead, Dumbarton (Croad Langshan).
V	No. 318	Lyle, Lady, Glendelvine, Murthly (Yokohama).
H	No. 316	Hamilton, Thomas, Kirkton Kilns, Bathgate (Houdan).

CLASS 79. ANY OTHER RECOGNISED BREED OF POULTRY —Hen.

1st	No. 323	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Modern Game).
2nd	No. 325	Jackson, Robin, Garden Park, Ayr (Cochin, Partridge).
3rd	No. 328	M'Vicar, Daniel, Burnside Cottage, Lennoxtown (Polish, Gold).
V	No. 324	Jackson, Robin, Garden Park, Ayr (Cochin, Partridge).
H	No. 326	Laurie, Mrs, Kettlestoun Mains, Linlithgow (Ancona).

CLASS 80. ANY OTHER RECOGNISED BREED OF POULTRY —Cockerel.

1st No. 334 Orr, James D., Service Station, Gargunnock, Stirling (Welsummer).
2nd No. 332 Black, William A. P., Croftfoot, Old Polmont, Falkirk (Malay).

CLASS 81. ANY OTHER RECOGNISED BREED OF POULTRY —Pullet.

1st No. 335 Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Ancona).
2nd No. 336 Orr, James D., Service Station, Gargunnock, Stirling (Welsummer).

UTILITY POULTRY.

CLASS 82. LEGHORN—Any Variety—Cock or Cockerel.

1st No. 337 Binnie, W., & Son, Garth House, Denny (White).
2nd No. 339 Guthrie, James, East Doura, Craigie, Kilmarnock (White).
3rd No. 341 M'Pherson, R., Drumboy, Strathaven (Brown).
V No. 338 Glencross, James H., 26 Garry Park, Glencraig, Fife (Exchequer).

CLASS 83. ANY OTHER VARIETY—Light Breed— —Cock or Cockerel.

1st No. 342 Binnie, W., & Son, Garth House, Denny (Minorca).

CLASS 84. WYANDOTTE—Any Colour—Cock or Cockerel.

1st No. 346 Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (White).
2nd No. 344 Binnie, W., & Son, Garth House, Denny (White).
3rd No. 347 Lyle, Lady, Glendelvine, Murthly (White).
V No. 348 M'Pherson, John, Meadowhead, Carluke (White).
H No. 349 Wharton, John, Honeycott Farm, Hawes, Yorks. (White).

CLASS 85. RHODE ISLAND RED—Cock or Cockerel.

1st No. 354 Rodger, David, Bonnyton Farm, Eaglesham.
2nd No. 353 Morgan, William, Balcurvie, Windygates.
3rd No. 351 M'Pherson, John, Meadowhead, Carluke.
V No. 355 Younger, Mrs J., Mount Melville, St Andrews.
H No. 350 Belfrage, William C., Aillneuk, Ashkirk, Selkirk.

CLASS 86. WELSUMMER—Cock or Cockerel.

1st No. 357 Orr, James D., Service Station, Gargunnock, Stirling.
2nd No. 356 Fox-Brockbank, A. H., The Croft, Kirksanton, Millom.
3rd No. 358 Orr, James D., Service Station, Gargunnock, Stirling.

CLASS 87. ANY OTHER VARIETY—Heavy Breed—Cock or Cockerel.

1st	No. 361	Orr, James D., Service Station, Gargunnock, Stirling (Buff Orpington).
2nd	No. 364	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).
3rd	No. 363	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).
V	No. 360	Burdett, John, 1 Lake Bank, Wingate, Co. Durham (Barnevelder).
H	No. 362	White, James, Huntlywood Farm, Gordon (Light Sussex).

CLASS 88. LEGHORN—White—Hen or Pullet.

1st	No. 369	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
2nd	No. 368	Guthrie, P. F., South Croft, Auchterarder.
3rd	No. 367	Guthrie, James, East Doura, Craigie, Kilmarnock.
V	No. 365	Binnie, W., & Son, Garth House, Denny.
H	No. 373	Parker, John, Sornhill, Galston, Ayrshire.
C	No. 366	Campbell, Colin, Garavoirne, Campbeltown.

CLASS 89. LEGHORN—Any other Colour—Hen or Pullet.

1st	No. 377	M'Pherson, R., Drumboy, Strathaven (Black).
2nd	No. 378	Mitchell, W. G., Newstead, Melrose (Black).
3rd	No. 375	Glencross, James H., 26 Garry Park, Glencraig, Fife (Exchequer).
V	No. 380	Williamson Brothers, East Lochran, Blairadam (Black).
H	No. 379	Watts, Colonel Humphrey, Haslington Hall, Crewe (Black).
C	No. 374	Clark, George, 453 Cambusnethan Street, Wishaw (Black).

CLASS 90. WYANDOTTE—Any Colour—Hen or Pullet.

1st	No. 392	Wilson, T. G., Carbeth Home Farm, Balfron Station (White).
2nd	No. 381	Binnie, W., & Son, Garth House, Denny (White).
3rd	No. 391	Wilson, T. G., Carbeth Home Farm, Balfron Station (White).
V	No. 388	Rodger, David, Bonnyton Farm, Eaglesham (White).
H	No. 384	Livingstone, John, Peel Hill, Strathaven (White).
C	No. 383	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (White).

CLASS 91. RHODE ISLAND RED—Hen or Pullet.

1st	No. 401	Rodger, David, Bonnyton Farm, Eaglesham.
2nd	No. 395	Livingstone, John, Peel Hill, Strathaven.
3rd	No. 400	Orr, James D., Service Station, Gargunnock, Stirling.
V	No. 394	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
H	No. 397	M'Pherson, John, Meadowhead, Carluke.
C	No. 402	Younger, Mrs J., Mount Melville, St Andrews.

CLASS 92. BARNEVELDER—Hen or Pullet.

1st	No. 403	Binnie, W., & Son, Garth House, Denny.
2nd	No. 406	Morgan, William, Balcurvie, Windygates.
3rd	No. 404	Burdett, John, 1 Lake Bank, Wingate, Co. Durham.
V	No. 405	Campbell, Colin, Garavoirne, Campbeltown.

CLASS 93. ROCK—Any Colour—Hen or Pullet.

1st	No. 408	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Buff).
2nd	No. 410	Orr, James D., Service Station, Gargunnock, Stirling (Buff).
3rd	No. 411	Orr, James D., Service Station, Gargunnock, Stirling (Buff).
V	No. 409	Morgan, William, Balcurvie, Windygates (Buff).
H	No. 407	Belfrage, William C., Aillneuk, Ashkirk, Selkirk (Barred).
C	No. 412	Orr, James D., Service Station, Gargunnock, Stirling (Buff).

CLASS 94. WELSUMMER—Hen or Pullet.

1st	No. 418	Orr, James D., Service Station, Gargunnock, Stirling.
2nd	No. 414	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom.
3rd	No. 419	Orr, James D., Service Station, Gargunnock, Stirling.
V	No. 420	Orr, James D., Service Station, Gargunnock, Stirling.
H	No. 415	Marshall, Miss, The Gables, Longtown, Cumberland.
C	No. 416	Morris, Miss I. E. Pollok, Chipperkyle, Kirkpatrick-Durham.

CLASS 95. ANY OTHER VARIETY—Hen or Pullet.

1st	No. 422	Binnie, W., & Son, Garth House, Denny (Minorca).
2nd	No. 429	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).
3rd	No. 423	Graham, John, Kirkfield, Lanark (Minorca).
V	No. 424	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Sussex).
H	No. 425	Macgregor, James S., High Street, Greenlaw (Minorca).
C	No. 426	Ronald, John, Tunnoch, Maybole (Ancona).

CLASS 96. ANY CROSS FOR LAYING PURPOSES—Hen.

1st	No. 436	Morgan, William, Balcurvie, Windygates.
2nd	No. 434	M'Howat, William, Muckcroft, Lennoxtown.
3rd	No. 430	Campbell, Colin, Garavoirne, Campbeltown.
V	No. 440	Rodger, David, Bonnyton Farm, Eaglesham.
H	No. 431	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.

CLASS 97. ANY CROSS FOR LAYING PURPOSES—Pullet.

1st	No. 443	Kirkwood, R. A., Camelon Hotel, Falkirk.
2nd	No. 442	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks.
3rd	No. 446	Ross, J. C., Stirling Road, Larbert.
V	No. 444	Orr, James D., Service Station, Gargunnock, Stirling.
H	No. 445	Orr, James D., Service Station, Gargunnock, Stirling.

CLASS 98. DUCKS—Aylesbury—Drake.

1st	No. 448	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 447	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 449	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 99. DUCKS—Aylesbury—Duck.

1st	No. 450	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 451	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 452	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 100. DUCKS—Aylesbury—Drake or Duck (Young).

1st	No. 454	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 453	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
3rd	No. 455	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 459	Macgregor, James S., High Street, Greenlaw.
H	No. 458	Macgregor, James S., High Street, Greenlaw.

CLASS 101. DUCKS—Orpington—Drake.

1st	No. 460	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 462	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 461	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 102. DUCKS—Orpington—Duck.

1st	No. 464	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 465	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 463	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 103. DUCKS—Orpington—Drake or Duck (Young).

1st	No. 468	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 466	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
V	No. 467	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.

CLASS 104. DUCKS—Indian Runner—Drake.

1st	No. 469	Jackson, Vernon, Jun., The Mansion, Ford, Salop.
2nd	No. 471	M'Pherson, R., Drumboy, Strathaven.
3rd	No. 470	Kirkwood, R. A., Camelon Hotel, Falkirk.
V	No. 472	Shewan, Alexander, Longhillock, Alves, Forres.

CLASS 105. DUCKS—Indian Runner—Duck.

1st	No. 475	M'Pherson, R., Drumboy, Strathaven.
2nd	No. 473	Jackson, Vernon, Jun., The Mansion, Ford, Salop.
3rd	No. 474	Kirkwood, R. A., Camelon Hotel, Falkirk.
V	No. 476	Shewan, Alexander, Longhillock, Alves, Forres.

CLASS 106. DUCKS—Indian Runner—Drake or Duck (Young).

1st	No. 478	Kirkwood, R. A., Camelon Hotel, Falkirk.
2nd	No. 477	Jackson, Vernon, Jun., The Mansion, Ford, Salop.
3rd	No. 480	Laurie, Mrs, Kettlestoun Mains, Linlithgow.
V	No. 479	Laurie, Mrs, Kettlestoun Mains, Linlithgow.

CLASS 107. DUCKS—Any other Variety—Drake.

1st	No. 481	Kerr, J. E., of Harviestoun, Dollar (Rouen).
2nd	No. 482	Kerr, J. E., of Harviestoun, Dollar (Rouen).
3rd	No. 483	Kirkwood, R. A., Camelon Hotel, Falkirk (Magpie).

CLASS 108. DUCKS—Any other Variety—Duck.

1st	No. 486	Kerr, J. E., of Harviestoun, Dollar (Rouen).
2nd	No. 485	Kerr, J. E., of Harviestoun, Dollar (Rouen).
3rd	No. 487	Kirkwood, R. A., Camelon Hotel, Falkirk (Magpie).
V	No. 488	M'Pherson, R., Drumboy, Strathaven (Rouen).

CLASS 109. DUCKS—Any other Variety—Drake or Duck (Young).

1st	No. 492	Kirkwood, R. A., Camelon Hotel, Falkirk (Magpie).

CLASS 110. GEESE—Gander.

1st	No. 493	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom.
2nd	No. 494	Harrop, Captain N. M., Garthgynan, Ruthin, North Wales.
3rd	No. 496	Shewan, Alexander, Longhillock, Alves, Forres.
V	No. 495	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 111. GEESE—Goose.

1st	No. 497	Fox-Brockbank, A. H., The Croft, Kirksanton, Millom.
2nd	No. 500	Shewan, Alexander, Longhillock, Alves, Forres.
3rd	No. 499	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 112. TURKEYS—Cock.

1st	No. 501	Andrew, Mrs J., South Tulloford, Oldmeldrum.
2nd	No. 504	Rottenburg, F. A., of Lochlane, Crieff.

CLASS 113. TURKEYS—Hen.

1st	No. 506	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream.
2nd	No. 505	Andrew, Mrs J., South Tulloford, Oldmeldrum.
V	No. 507	Laurie, Mrs, Kettlestoun Mains, Linlithgow.

TABLE POULTRY.

CLASS 114. ANY PURE BREED—Cock.

1st	No. 509	Binnie, W., & Son, Garth House, Denny (Wyandotte).
2nd	No. 511	Harbottle, Mr and Mrs R. P., Albion House, Great Ayton, Yorks. (Sussex).
3rd	No. 508	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Old English Game).
V	No. 512	Pettigrew, John, Moss View, Dalmellington (Indian Game).
H	No. 514	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).

CLASS 115. ANY PURE BREED—Cockerel.

1st	No. 516	Binnie, W., & Son, Garth House, Denny (Wyandotte).
2nd	No. 515	Armstrong, Joseph, Barclose, Scaleby, Carlisle (Old English Game).
3rd	No. 517	Black, William A. P., Croftfoot, Old Polmont, Falkirk (Indian Game).
V	No. 519	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).
H	No. 518	Orr, James D., Service Station, Gargunnock, Stirling (Rock).

CLASS 116. ANY CROSS—Cock.

1st	No. 521	Huntly, James, & Son, Hirsel Poultry Farm, Coldstream (Game—Sussex).
2nd	No. 522	Morris, Miss I. E. Pollok, Chipperkyle, Kirkpatrick-Durham (Jersey Giant—Welsummer).
V	No. 520	Black, William A. P., Croftfoot, Old Polmont, Falkirk (Sussex—Indian Game).

CLASS 117. ANY CROSS—Cockerel.

1st	No. 523	Black, William A. P., Croftfoot, Old Polmont, Falkirk (Sussex—Indian Game).
2nd	No. 524	Orr, James D., Service Station, Gargunnock, Stirling (Rock—Wyandotte).

CLASS 118. ANY PURE BREED OR CROSS—Pair of Pullets.

1st	No. 528	Wilson, T. G., Carbeth Home Farm, Balfron Station (Light Sussex).
2nd	No. 529	Wilson, T. G., Carbeth Home Farm, Balfron Station (White Wyandotte).
3rd	No. 527	Orr, James D., Service Station, Gargunnock, Stirling (White Wyandotte).

DAIRY PRODUCE

CLASS 1. POWDERED BUTTER, not less than 2 lb.—PREMIUMS, £4, £3, £2, and £1.

1st	No. 3	Letham, Mrs Andrew, Hills of Dalserf, Ashgill, Lanarkshire.
2nd	No. 6	M'Lachlan, W., East Crookedstone, Quarter, Hamilton.
3rd	No. 4	M'Culloch, Mrs, High Drumlamford Farm, Barrhill, Girvan, Ayrshire.
4th	No. 9	Ramage, Mrs James, Lathallan Dairy, Polmont, Falkirk.
V	No. 7	Monteith, Mrs H., Island, Bothkennar, Falkirk.
H	No. 2	Crawford, William, Hatton Mains, Kirknewton, Midlothian.
C	No. 14	Young, William, Dalmoak, Dumbarton.

CLASS 2. FRESH BUTTER, Two 1-lb. lots, to be made up in form of bricks without any prints.—PREMIUMS, £4, £3, £2, and £1.

1st	No. 19	MacGregor, Miss M., South Bellyeoman Farm, Dunfermline.
2nd	No. 28	Shanks, Miss, Broomhill, Denny, Stirlingshire.
3rd	No. 24	Ramage, Mrs James, Lathallan Dairy, Polmont, Falkirk.
4th	No. 18	M'Culloch, Mrs, High Drumlamford Farm, Barrhill, Girvan, Ayrshire.
V	No. 17	Letham, Mrs Andrew, Hills of Dalserf, Ashgill, Lanarkshire.
H	No. 22	Monteith, Mrs H., Island, Bothkennar, Falkirk.
C	No. 29	Young, William, Dalmoak, Dumbarton.

CLASS 3. CHEDDAR CHEESE, 56 lb. and upwards.—PREMIUMS, £9, £5, £3, £2, and £1.

1st	No. 38	M'Dowall, George, South Boreland, Dunragit, Wigtownshire.
2nd	No. 39	M'Minn, Samuel, Torrs Dairy, Kirkcudbright.
3rd	No. 33	Cruikshank, John, Castle Creavie, Castle Douglas.
4th	No. 34	Finlay, John, The Ross Farm, Kirkcudbright.
5th	No. 35	Gibson, John C., Kirkeoch, Kirkcudbright.
V	No. 31	Borland, Hugh, Netherthird, Castle Douglas.
H	No. 30	Baird, J. G., Kirkchrist, Kirkcudbright.
C	No. 32	Borland, Robert, Powillimount, Kirkbean, Dumfries.

CLASS 4. CHEESE, 14 lb. and under.—PREMIUMS, £5, £3, £2, and £1.

1st	No. 50	M'Dowall, George, South Boreland, Dunragit, Wigtownshire.
2nd	No. 45	Cruikshank, John, Castle Creavie, Castle Douglas.
3rd	No. 51	M'Minn, Samuel, Torrs Dairy, Kirkcudbright.
4th	No. 46	Finlay, John, The Ross Farm, Kirkcudbright.
V	No. 42	Baird, J. G., Kirkchrist, Kirkcudbright.
H	No. 47	Gibson, John C., Kirkeoch, Kircudbright.
C	No. 49	Hunter, John P., Garthland Mains, Stranraer.

HONEY, &c.

OPEN CLASSES.

Empire Exhibition Perpetual Challenge Cup. Presented by the Scottish Beekeepers' Association. *To be competed for annually at the Highland and Agricultural Society's Show, and awarded to the competitor gaining most points in the Classes for Honey and Wax only, calculated on the following basis : 1st Prize, 3 points ; 2nd Prize, 2 points ; 3rd Prize, 1 point. In the event of a tie, the competitor having most first prizes to be adjudged the winner.*

Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire (28 points).

Silver and Bronze Medals awarded by the Scottish Bee-Keepers' Association *to the First and Second winners of the greatest number of points in the Classes for Honey and Wax only, calculated on the following basis : 1st Prize, 3 points ; 2nd Prize, 2 points ; 3rd Prize, 1 point.*

Silver Medal—Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire (28 points).

Bronze Medal—Allan, George C., 12 Miller Road, Ayr (9 points).

CLASS 1. Collection of APPLIANCES suitable for a beginners' outfit for Bee-keeping. A card naming all the articles, along with the price at which they will be supplied for one year from date, to be fixed to the exhibit.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 2	Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.
2nd	No. 1	Scottish Beehives, Ltd., 18 Mill Street, Perth.

CLASS 2. Best and most complete FRAME HIVE for general use, with any improvements. Unpainted.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 6	Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.
2nd	No. 5	Scottish Beehives, Ltd., 18 Mill Street, Perth.
3rd	No. 4	Bennet, Mrs J. Robertson, Station Road, Methven, Perthshire.

CLASS 3. Best and most complete HIVE. Unpainted. Price not to exceed 37s. 6d.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 9	Steele, R., & Brodie, Bee Appliance Works, Wormit, Fife.
2nd	No. 8	Scottish Beehives, Ltd., 18 Mill Street, Perth.

CLASS 4. Six Sections of COMB HONEY, excluding Heather Honey.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 12	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 15	Wilson, A., West Lodge, Montgomerie, Mauchline, Ayrshire.
3rd	No. 14	Mackay, Donald, Dunn, Watten, Caithness.
V	No. 10	Allan, George C., 12 Miller Road, Ayr.
C	No. 11	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.

CLASS 5. Six Sections of HEATHER HONEY.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 18	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 16	Allan, George C., 12 Miller Road, Ayr.
3rd	No. 17	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
V	No. 20	Pate, Thomas, Milnathort, Kinross-shire.
C	No. 19	M'Vey, John, Mount Pleasant, Cove, Dumbartonshire.
C	No. 21	Smith, Mrs A., Bartlemoor Poultry and Bee Farm, Kincardine O'Neil, Aberdeenshire.

CLASS 6. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 24	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 22	Allan, George C., 12 Miller Road, Ayr.
3rd	No. 30	Smith, Mrs A., Bartlemoor Poultry and Bee Farm, Kincardine O'Neil, Aberdeenshire.
V	No. 28	Renton, James G., St Columba, Dailly, Ayrshire.
H	No. 23	Barrie, Michael N., The Bungalow, Kennoway, Windygates, Fife.
C	No. 25	Edmondson, R., Rothay, Hale Road, Ringway, Altrincham.
C	No. 26	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
C	No. 29	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.

CLASS 7. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 37	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
2nd	No. 38	M'Millan, Robert, Jun., Garroch Mill, Dalry, Castle Douglas.
3rd	No. 40	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.
V	No. 39	Rutherford, F. J., Flodden Cottage, Cornhill-on-Tweed, Northumberland.
H	No. 35	Edmondson, R., Rothay, Hale Road, Ringway, Altrincham.
C	No. 31	Allan, George C., 12 Miller Road, Ayr.

CLASS 8. Six Jars of PRESSED HEATHER HONEY in liquid form, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 48	Ferguson, George, Monaughty, Alves, Forres, Morayshire.
2nd	No. 54	Smith, Mrs A., Bartlemoor Poultry and Bee Farm, Kincardine O'Neil, Aberdeenshire.
3rd	No. 49	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
V	No. 52	Rutherford, F. J., Flodden Cottage, Cornhill-on-Tweed, Northumberland.
H	No. 43	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
C	No. 53.	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.

CLASS 9. Six Jars of GRANULATED HONEY, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 60	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 59	Duffton, Robert, Macdonald Street, Huntly, Aberdeenshire.
3rd	No. 57	Allan, George C., 12 Miller Road, Ayr.
V	No. 62	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
H	No. 58	Dickson, R., 28 Haldane Avenue, Haddington.
C	No. 65	Wilson, A., West Lodge, Montgomerie, Mauchline, Ayrshire.

CLASS 10. Two shallow Frames of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 67	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 66	Duffton, Robert, Macdonald Street, Huntly, Aberdeenshire.
3rd	No. 70	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.
V	No. 69	Jackson, John, Tarlair, Thornhill, Dumfriesshire.

CLASS 11. Best display of HONEY in any form suitable for a shop window in space 4 feet by 4 feet. Weight of honey not to exceed 40 lb. —PREMIUMS, 60s., 30s., and 20s.

1st	No. 71	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 72	Smith, William W., 71 High Street, Innerleithen.

CLASS 12. Best exhibit of not less than 1 lb. of WAX in any form.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 76	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 74	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
3rd	No. 78	M'Millan, Robert, Jun., Garroch Mill, Dalry, Castle Douglas.
V	No. 77	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
H	No. 84	Thomson, Miss M., 4 Burn Street, Dalbeattie.
C	No. 81	Rutherford, F. J., Flodden Cottage, Cornhill-on-Tweed, Northumberland.

CLASS 13. Best exhibit of not less than 1 lb. of WAX made into shapes for retail trade and over-counter trade. Convenience in packing to be taken into consideration.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 89	Rutherford, F. J., Flodden Cottage, Cornhill-on-Tweed, Northumberland.
2nd	No. 91	Thomson, Miss M., 4 Burn Street, Dalbeattie.
3rd	No. 88	Niven, H. L., 3 Monearn Terrace, Banchory, Kincardineshire.
V	No. 85	Allan, George C., 12 Miller Road, Ayr.
H	No. 90	Smith, Mrs A., Bartlemoor Poultry and Bee Farm, Kincardine O'Neil, Aberdeenshire.

CLASS 14. OBSERVATORY HIVE, with Queen and Bees—two or more frames.—PREMIUMS, 50s., 30s., and 20s.

1st	No. 95	Smith, William W., 71 High Street, Innerleithen.
2nd	No. 93	High, George, 10 Calside, Paisley.
3rd	No. 94	Porter, Andrew, Cleddans Stables, Airdrie.
V	No. 92	Amos, Thomas F., 212 Seaward Street, Glasgow, S. 1.
H	No. 96	Stark, John, 42 Main Street, Calderbank, Airdrie.
C	No. 97	Stopani, R., 27 Ruthrieston Terrace, Aberdeen.

CLASS 15. OBSERVATORY HIVE, with Queen and Bees—one frame, no super.—PREMIUMS, 40s., 30s., and 15s.

1st	No. 100	Birrell, James, 24 King Street, Perth.
2nd	No. 104	Smith, William W., 71 High Street, Innerleithen.
3rd	No. 102	Porter, Andrew, Cleddans Stables, Airdrie.
V	No. 103	Smith, George C., 1 Burnside, Pitcullen Terrace, Perth.
H	No. 105	Stark, John, 42 Main Street, Calderbank, Airdrie.
C	No. 99	Amos, Thomas F., 212 Seaward Street, Glasgow, S. 1.

CONFINED TO SCOTTISH EXHIBITORS.

CLASS 16. One Standard Frame of COMB HONEY for extracting purposes.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 106	Allan, George C., 12 Miller Road, Ayr.
2nd	No. 107	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.

CLASS 17. Six Sections of COMB HONEY, excluding Heather Honey. —PREMIUMS, 20s., 15s., and 10s.

1st	No. 114	Mackay, Donald, Dunn, Watten, Caithness.
2nd	No. 119	Wilson, A., West Lodge, Montgomerie, Mauchline, Ayrshire.
3rd	No. 109	Allan, George C., 12 Miller Road, Ayr.
V	No. 112	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
H	No. 118	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.
C	No. 113	Macdonald, D. G., Kinloch Gardens, Collessie, Fife.

CLASS 18. Six Sections of HEATHER HONEY.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 124	Hutton, W., 90 St Leonard's Street, Dunfermline.
2nd	No. 122	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
3rd	No. 121	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
V	No. 127	Pate, Thomas, Milnathort, Kinross-shire.
H	No. 125	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
C	No. 123	Ewart, James, 102 Glengate, Kirriemuir, Angus.

CLASS 19. Six Jars of RUN or EXTRACTED MEDIUM or DARK-COLOURED HONEY, excluding Heather Honey, approximate weight 6 lb.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 130	Duffton, Robert, Macdonald Street, Huntly, Aberdeenshire.
2nd	No. 136	M'Millan, Robert, Jun., Garroch Mill, Dalry, Castle Douglas.
3rd	No. 139	Scott, George, Waterton, 84 Ayr Road, Cumnock, Ayrshire.
V	No. 142	Wilson, A., West Lodge, Montgomerie, Mauchline, Ayrshire.
H	No. 140	Smith, William W., 71 High Street, Innerleithen.
C	No. 129	Allan, George C., 12 Miller Road, Ayr.
C	No. 134	Jackson, John, Tarlair, Thornhill, Dumfriesshire.

CLASS 20. Six Jars of PRESSED HEATHER HONEY in liquid form, approximate weight 6 lb.—PREMIUMS, 20s., 15s., and 10s.

1st	No. 145	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
2nd	No. 155	Thoms, A. R. B., Spring Bank, Coupar-Angus.
3rd	No. 156	Thoms, John, 37 Lintrose, Coupar-Angus.
V	No. 150	Renton, James G., St Columba, Dailly, Ayrshire.
H	No. 152	Smith, Mrs A., Bartlemoor Poultry and Bee Farm, Kincardine O'Neil, Aberdeenshire.
C	No. 143	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
C	No. 146	Ferguson, George, Monaughty, Alves, Forres, Morayshire.

CLASS 21. Six Jars of RUN or EXTRACTED LIGHT-COLOURED HONEY, approximate weight 6 lb.—PREMIUMS, 30s., 20s., and 10s.

1st	No. 165	Jackson, John, Tarlair, Thornhill, Dumfriesshire.
2nd	No. 168	Renton, James G., St Columba, Dailly, Ayrshire.
3rd	No. 160	Caldwell, David, Lealoan, Darvel, Ayrshire.
V	No. 162	Duguid, Robert, Victoria Apiary, Colpy, Insch, Aberdeenshire.
H	No. 159	Anderson, Gordon, Home Farm, Mayne, Elgin, Morayshire.
C	No. 158	Allan, George C., 12 Miller Road, Ayr.
C	No. 161	Duffton, Robert, Macdonald Street, Huntly, Aberdeenshire.
C	No. 163	Ewart, James, 102 Glengate, Kirriemuir, Angus.
C	No. 164	Hutton, W., 90 St Leonard's Street, Dunfermline.
C	No. 167	Pate, Thomas, Milnathort, Kinross-shire.
C	No. 171	Thomson, Miss M., 4 Burn Street, Dalbeattie.
C	No. 172	Wilson, A., West Lodge, Montgomerie, Mauchline, Ayrshire.

RURAL INDUSTRIES

OPEN CLASSES.

SHETLAND KNITTING.

(*Exhibits made from Shetland Wool.*)

CLASS 1. FINE LACE SHAWL or SCARF.—
PREMIUMS, £3, £2, and £1.

1st	No. 8	Peterson, Mrs William, Toft, Muness, Uyeasound, Lerwick (Scarf).
2nd	No. 3	Cluness, Mrs A. T., Muness, Uyeasound, Lerwick (Scarf).
3rd	No. 2	Cluness, Mrs A. T., Muness, Uyeasound, Lerwick (Scarf).
H	No. 7	Jamieson, Miss Helen, Gerriegarth, Baltasound, Lerwick (Scarf).
C	No. 1	Anderson, Miss Joan H., Hoolenbrinda, Norwick, Haroldswick, Lerwick (Scarf).

CLASS 2. FINE LACE GOODS OTHER THAN ABOVE.—
PREMIUMS, £3, £2, and £1.

1st	No. 17	Gilbertson, Mrs M., Muness, Uyeasound, Lerwick (Jumper).
2nd	No. 11	Anderson, Miss Mary J., Westerhouse, Cullivoe, Lerwick (Jumper).
3rd	No. 22	Sandison, Mrs T. G., Muness, Uyeasound, Lerwick (Jumper).
V	No. 25	Sutherland, Miss Joan, Ark, Haroldswick, Lerwick (Christening Robe).
H	No. 16	Cluness, Mrs A. T., Muness, Uyeasound, Lerwick (Jumper).
C	No. 23	Sinclair, Mrs J., Mid Ayre, Uyeasound, Lerwick (Spencer).

CLASS 3. JUMPER or CARDIGAN—with or without sleeves.—
PREMIUMS, £3, £2, and £1.

1st	No. 37	Henderson, Miss Margaret G., Post Office, Levenwick, Shetland (Jumper).
2nd	No. 38	Henry, Mrs S., Moy, Co. Tyrone, Northern Ireland (Jumper).
3rd	No. 42	Jacobson, Miss Eva, Stonydale, Bridge of Walls, Shetland (Jumper).
V	No. 28	Bookless, Mrs E., Moy, Co. Tyrone, Northern Ireland (Jumper).
H	No. 54	Smith, Miss M. H., Troswick, Dunrossness, Shetland (Jumper).
C	No. 34	Gordon, Mrs James J., Farm House, Sumburgh, Shetland (Cardigan).

CLASS 4. EXHIBITS OTHER THAN ABOVE.—PREMIUMS, £2, £1, and 10s.

1st	No. 64	Jamieson, Mrs M., The Bungalow, Baltasound, Shetland (Baby's Wrap).
2nd	No. 62	Henry, Mrs S., Moy, Co. Tyrone, Northern Ireland (Child's Suit).
3rd	No. 60	Bookless, Mrs E., Moy, Co. Tyrone, Northern Ireland (Jersey Suit).
V	No. 67	Moar, Miss Elizabeth G., Hivdagarth, Camb, Lerwick (Gauntlet Gloves).
C	No. 68	Smith, Miss Elizabeth, Sumburgh Farm, Sumburgh, Shetland (Cardigan Suit).

TWEEDS.

CLASS 5. HARRIS—Hand-woven—PREMIUMS, £3, £2, and £1.

1st	No. 90	MacPhail, Miss Margaret, Minch View, Locheport, Isle of North Uist.
2nd	No. 88	Maclean, Mrs M., Backhill, Bernera, Lochmaddy.
3rd	No. 82	Mackay, Mrs J., 8 Portnalong, Portree.
V	No. 86	Maclean, Mrs M., Backhill, Bernera, Lochmaddy.
H	No. 89	MacLeod, Mrs Donald J., 17 Portnalong, Portree.
C	No. 80	MacInnes, Mrs Donald, 5 Portnalong, Portree.

CLASS 5A. OTHER TWEED—Hand-woven—PREMIUMS, £3, £2, and £1.

1st	No. 73	Hogg, David, 10 High Street, Earlston, Berwickshire.
2nd	No. 71	Dickson, A. F., Benarty, Brora.
3rd	No. 74	Hogg, David, 10 High Street, Earlston, Berwickshire.
V	No. 70	Dickson, A. F., Benarty, Brora.
H	No. 75	Hogg, David, 10 High Street, Earlston, Berwickshire.
C	No. 76	Irvine, Mrs Arthur, North Brae, Brae, Shetland.

CLASS 6. TARTAN—Vegetable-dyed and Hand-woven.—PREMIUMS, £3, £2, and £1.

1st	No. 103	Ross, D. S., Lairg.
2nd	No. 98	MacGregor, Robert, 14-16 Tomnahurich Street, Inverness.
3rd	No. 100	Mills, Mrs John, Cockington, Torquay.
V	No. 104	Ross, Mrs D. S., Lairg.
H	No. 101	Murray, Miss Margaret, Tressady Hill, Lairg.

CLASS 7. CARRIAGE RUG or PLAID—Hand-woven.—PREMIUMS, £3, £2, and £1.

1st	No. 108	MacGregor, Robert, 14-16 Tomnahurich Street, Inverness.
2nd	No. 112	Ross, W. G., Lairg.
3rd	No. 109	Mills, Mrs John, Cockington, Torquay.
V	No. 110	Murray, Miss Margaret, Tressady Hill, Lairg.

MISCELLANEOUS.

CLASS 8. HOOK-THROUGH FLOOR RUG (New Wool).—PREMIUMS, £3, £2, and £1.

1st	No. 114	Crawford, Mrs J., Hatton Mains, Kirknewton.
2nd	No. 119	Henry, Mrs, 2 Gayfield, Arbroath.
3rd	No. 131	Young, Mrs M., Stabehall, Stow.
V	No. 125	Mitchell, Mrs W., Coul Waterworks, Markinch, Fife.
H	No. 129	Wilson, Miss M. A., Muircot, Tillicoultry.
C	No. 113	Bayne-Jardine, Mrs M. S., Birthwood, Biggar.
C	No. 120	Howie, Mrs and Miss Jane, 2 Ruthrieston Road, Aberdeen.

CLASS 9. ANY OTHER VARIETY FLOOR RUG (New Wool).—PREMIUMS, £3, £2, and £1.

1st	No. 138	MacKean, Mrs, 4 Sandhurst Avenue, Wittington, Manchester.
2nd	No. 133	Gillespie, Miss W. L., 28 Murrayfield Gardens, Edinburgh.
3rd	No. 140	Parsons, Mrs, Achnaba, Lochgilphead, Argyll.
V	No. 137	MacKean, Mrs, 4 Sandhurst Avenue, Wittington, Manchester.

CLASS 10. SPECIMEN OF WHITE EMBROIDERY—to be exhibited unwashed.—PREMIUMS, £3, £2, and £1.

1st	No. 141	English, Mrs E., Middleton, Morpeth, Northumberland (Nightdress Case).
2nd	No. 144	Mackay, Miss Christina, The Clett, Castletown, Caithness (Cot Cover).
3rd	No. 146	Pringle, Mrs, Ouston, Ninebanks, Hexham (Tea Cloth—reversible).

CLASS 11. SPECIMEN OF COLOURED EMBROIDERY—Silk or Cotton. (Canvas work not eligible.)—PREMIUMS, £3, £2, and £1.

1st	No. 166	Reid, Miss G., Enfield, Symington, Biggar (Panel).
2nd	No. 147	Blair, Mrs, See-Worthy, North Berwick (Chart of the S.W.R.I.).
3rd	No. 174	Stuart, Mrs S., Glenburn, Sharnothshields, Newmains, Lanarkshire (Tea Cloth).
V	No. 175	Wallace, Miss E. D., Balgreddan, Kirkcudbright (Sampler).
V	No. 154	English, Mrs E., Middleton, Morpeth, Northumberland (Cushion Cover).
H	No. 148	Cameron, Miss C. J., Cowden Castle, Dollar (Map).
C	No. 156	Forrester, Miss M., 3 Railway Buildings, Greenhill, Bonnybridge, Stirlingshire (Tea Cloth).
C	No. 168	Roberts, Mrs E., Schoolhouse, Mossdale, Castle Douglas (Tea Cloth).
C	No. 173	Sproat, Miss Frances H., Stronchrubie, Garlieston, Wigtownshire (Supper Cloth).
C	No. 151	Donaldson, Miss, Clovenfords, Galashiels (Panel).

CLASS 12. SPECIMEN OF COLOURED EMBROIDERY—Woolwork. (Canvas work not eligible).—PREMIUMS, £3, £2, and £1.

1st	No. 182	Kinloch W.R.I., Perthshire (Map of Kinloch and District).
2nd	No. 187	Reid, Miss G., Enfield, Symington, Biggar (Bedspread).
3rd	No. 178	Flett, Mrs, Hartfell, Colinton, Edinburgh (Panel).
V	No. 189	Scott, Mrs William R., Balfunning, Balfron, Stirlingshire (Chair Seat).
H	No. 186	Rae, Miss Jean C., 158 Dalrymple Street, Girvan (Panel).
C	No. 188	Scott, Mrs A. S., 36 Parkhead Loan, Edinburgh (Square).

CLASS 13. SPECIMEN OF OLD ENGLISH QUILTING.—PREMIUMS, £3, £2, and £1.

1st	No. 195	Pithie, Miss M., 21 Henry Street, Langholm (Cushion).
2nd	No. 197	Rattray, Miss Janet, Muirdrum, Carnoustie (Tea Cosy).
3rd	No. 196	Pithie, Miss M., 21 Henry Street, Langholm (Sachet).
H	No. 190	Brown, Mrs G. S., Rose Cottage, Gordon, Berwickshire (Quilt).

CLASS 14. PAIR OF LEATHER GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 200	Dickie, Miss Anne L., 98 Nicol Street, Kirkcaldy.
2nd	No. 201	Dickie, Miss Anne L., 98 Nicol Street, Kirkcaldy.
3rd	No. 202	Dunchurch and Thurlaston Women's Institute, Rugby.
V	No. 204	Dunchurch and Thurlaston Women's Institute, Rugby.
H	No. 203	Dunchurch and Thurlaston Women's Institute, Rugby.
C	No. 206	Dunchurch and Thurlaston Women's Institute, Rugby.

CLASS 15. SPECIMEN OF LEATHER WORK OTHER THAN GLOVES.—PREMIUMS, £2, £1, and 10s.

1st	No. 210	Blair, Miss S. E. B., Red Gables, West Linton (Stool).
2nd	No. 215	Nodwell, Mrs, 54 Ashburton Road, Kelvinside, Glasgow (Bag).
3rd	No. 213	M'Arthur, Mrs, Rhuallan, Buchlyvie, Stirlingshire (Blotter).
H	No. 211	Davidson, Miss C. R., Shawfield, Dunsyre, Lanark (Shopping Bag).
C	No. 212	Davidson, Miss C. R., Shawfield, Dunsyre, Lanark (Handbag).

CLASS 16. SPECIMEN OF HAND-PAINTED POTTERY.—PREMIUMS, £2, £1, and 10s.

1st	No. 227	Reid, Miss G., Enfield, Symington, Biggar (Vase).
2nd	No. 225	Nodwell, Mrs, 54 Ashburton Road, Kelvinside, Glasgow (Dutch Jug).
3rd	No. 229	Wight, Miss Betty, Glen House Studio, North Berwick (Bowl).
V	No. 223	Henderson, Miss Helen S. G., Redburn, Blackridge, Bathgate (Fruit Dish).
H	No. 218	Blair, Mrs, See-Worthy, North Berwick (Jug).
C	No. 221	Blair, Mrs, See-Worthy, North Berwick (Flower Bowl).
C	No. 226	Nodwell, Mrs, 54 Ashburton Road, Kelvinside, Glasgow (Loving Cup).

CLASS 17. SPECIMEN OF WOODCRAFT (Small article).—PREMIUMS, £3, £2, and £1.

1st	No. 236	Maxwell, John, 2 Downie Place, Musselburgh (Grandfather Clock).
2nd	No. 235	Maxwell, John, 2 Downie Place, Musselburgh (Occasional Table).
3rd equal	No. 237	Munro, Colin, 2 Harbour Road, Musselburgh (Electric Standard Lamp).
	No. 239	Parnell, John R., 106 Polwarth Gardens, Edinburgh (Coffee Table).
V	No. 234	Leslie, Alexander A., 18 Warrender Park Road, Edinburgh (Book Ends).

CLASS 18. HOME-SPUN YARN—2-3 cuts.—PREMIUMS, £2, £1, and 10s.

1st	No. 254	Smith, Miss Dollina, Gunnister, Uyeasound, Lerwick.
2nd	No. 244	Henderson, Miss C. E., Mid Ayre, Uyeasound, Lerwick.
3rd	No. 241	Anderson, Miss B. L., Hamar, Northmavine, Lerwick.
V	No. 242	Cluness, Mrs A. T., Muness, Uyeasound, Lerwick.
H	No. 240	Anderson, Miss B. L., Hamar, Northmavine, Lerwick.
C	No. 245	M'Culloch, Lady, Lochanhead, Dumfries.

CLASS 19. SPECIMEN OF HAND-MADE LACE other than Crochet.—PREMIUMS, £3, £2, and £1.

1st	No. 263	Sunter, Miss E., Mount Grange, Elie (Honiton).
2nd	No. 258	Chalmers, Miss Jessie C., Aucorn, Bower, Wick (Lacis).
3rd	No. 261	Mackay, Miss Christina, The Clett, Castletown, Caithness (Filet).
V	No. 257	Chalmers, Miss A. I., Viewbank, Maud, Aberdeenshire (Reticella).
H	No. 256	Budge, Mrs, Mount Ceres, Broomieknowe, Lasswade (Lacis).
C	No. 262	Scott, Mrs A. S., 36 Parkhead Loan, Edinburgh (Filet).

CLASS 20. MEN'S GOLF or KILT HOSE.—PREMIUMS, £2, £1, and 10s.

1st	No. 268	Dewar, Miss C., 44 Main Street, Tobermory, Isle of Mull.
2nd	No. 283	Moodie, Mrs A., 1 Kimberley Terrace, Dunoon.
3rd	No. 269	Duff, Mrs James, 20 Park Crescent, Scone, Perthshire.
V	No. 276	Mackay, Mrs D., Hillside, Gills, Canisbay, Wick.
H	No. 271	Gibson, Mrs M., Balfunning, Balfron, Stirlingshire.
C	No. 270	Gibson, Mrs M., Balfunning, Balfron, Stirlingshire.

CLASS 21. SHEPHERD'S CROOK, with horn handle—Hand-made.—PREMIUMS, £2, £1, and 10s.

1st	No. 301	Murray, William, Troloss Cottage, Elvanfoot, Abington.
2nd	No. 300	Murray, Peter, Watermeetings, Elvanfoot, Abington.
3rd	No. 295	M'Morran, William, Lochwood Cottage, Beattock.
V	No. 297	Moscrop, James W., Dryfehead, Wamphray, Beattock.
H	No. 294	M'Morran, William, Lochwood Cottage, Beattock.
C	No. 293	M'Gregor, John, Old Schoolhouse, Ballaterach, Dinnet.

CLASS 22. SHEPHERD'S CROOK IN ONE PIECE—Hand-made. —PREMIUMS, £2, £1, and 10s.

1st	No. 308	Grant, David, Dryfe Lodge, Boreland, Lockerbie.
2nd	No. 310	Grant, David, Dryfe Lodge, Boreland, Lockerbie.
3rd	No. 312	M'Gregor, John, Old Schoolhouse, Ballaterach, Dinnet.
V	No. 306	Campbell, Neil, Achnaba, Lochgilphead, Argyll.
H	No. 313	M'Lennan, Robert G., The Croft, Port Appin, Appin, Argyll.
C	No. 318	Moscrop, James W., Dryfehead, Wamphray, Beattock.

CLASS 23. WALKING-STICK—Hand-made.—PREMIUMS, £2, £1, and 10s.

1st	No. 341	Moscrop, James W., Dryfehead, Wamphray, Beattock.
2nd	No. 349	Murray, Peter, Watermeetings, Elvanfoot, Abington.
3rd	No. 344	Murray, Peter, Watermeetings, Elvanfoot, Abington.
V	No. 325	Grant, David, Dryfe Lodge, Boreland, Lockerbie.
H	No. 353	Scott, William J., Nisbet Miln, Ancrum, Roxburghshire.
C	No. 324	Grant, David, Dryfe Lodge, Boreland, Lockerbie.
C	No. 334	Leslie, Alexander A., 18 Warrender Park Road, Edinburgh.
C	No. 346	Murray, Peter, Watermeetings, Elvanfoot, Abington.

CONFINED CLASSES.

Open to Women's Rural Institutes and Members thereof in the whole of Scotland.

CLASS 24. SPECIMEN OF TAPESTRY (Canvas Work) in FLORENTINE, GROSPOINT, or PETIT POINT STITCHES.—PREMIUMS, £3, £2, and £1.

1st	No. 368	Stewart, Mrs J. C., Murdostoun Castle, Newmains, Lanarkshire (Stool Seat—Petit Point).
2nd	No. 365	Rattray, Miss Janet, Muirdrum, Carnoustie (Bag—Petit Point).
3rd	No. 370	Wallace, Miss Agnes A., Sypland, Kirkcudbright (Chair Seat—Petit Point).
V	No. 360	Crawford, Mrs J., Hatton Mains, Kirknewton (Picture—Petit Point).
H	No. 357	Ballantyne, Mrs J., Eastwood, Lesmahagow (Chair—Grospoint).

CLASS 25. SPECIMEN OF CORDED QUILTING (any article).—PREMIUMS, £2, £1, and 10s.

1st	No. 379	Sinclair, Mrs M., Kettletoft, Sanday, Orkney (Cushion).
2nd	No. 375	Macmaster, Mrs H. M., Culgroat, Stoneykirk, Wigtownshire (Cushion).
3rd	No. 372	Fox, Mrs, Millburn House, Moniaive (Cushion).
H	No. 376	Orr, Mrs Eric R., Lednabra, Balfron, Stirlingshire (Dressing Jacket).
C	No. 380	Wallace, Miss E. D., Balgreddan, Kirkcudbright (Cushion).
C	No. 377	Pithie, Miss M., 21 Henry Street, Langholm (Cushion).

CLASS 26. SPECIMEN OF SMOCKING (any article).—PREMIUMS, £3, £2, and £1.

1st	No. 392	Pithie, Miss M., 21 Henry Street, Langholm (Smock).
2nd	No. 391	Pearson, Miss Mary E., Ashley House, Newbridge, Midlothian (Child's Dress).
3rd	No. 384	Burns, Miss Elsie M., 11 High Street, Kirkcudbright (Child's Dress).
V	No. 382	Allan, Miss Janet R., Dumfries House Home Farm, Cumnock (Blouse).
C	No. 383	Allan, Miss Janet R., Dumfries House Home Farm, Cumnock (Blouse).
C	No. 385	Cutt, Mrs M., Thorwald, Sanday, Orkney (Smock).

CLASS 27. HAND-KNITTED WOOLLEN JUMPER or CARDIGAN, not Shetland or Fair Isle Pattern.—PREMIUMS, £2, £1, and 10s.

1st	No. 403	Hogg, Miss Helen C., Upper Senwick, Kirkcudbright (Jumper).
2nd	No. 411	Millar, Mrs J. W., Shawsholm, Closeburn, Dumfriesshire (Jumper).
3rd	No. 404	Hogg, Miss Janet, Upper Senwick, Kirkcudbright (Jumper).
V	No. 401	Erskine, Miss G. M., Schoolhouse, Blainslie, Galashiels (Jumper).
H	No. 414	Pithie, Miss M., 21 Henry Street, Langholm (Jumper).
C	No. 398	Dewar, Miss C., 44 Main Street, Tobermory, Isle of Mull (Jumper-Cardigan).
C	No. 402	Ferguson, Miss Mary L., Erkinholme Lodge, Langholm (Jumper).

CLASS 28. HAND-SEWN UNDERWEAR, Two Articles.—PREMIUMS, £2, £1, and 10s.

2nd	No. 419	Clarke, Mrs Courtney, Clint Lodge, St Boswells (Chemise and Knickers).
3rd	No. 421	Grant, Miss B., Wester Logie Farm, Blairgowrie, Perthshire (Nightdress and Slumber Cap).
C	No. 422	Grassie, Miss, Cowden Castle, Dollar (Nightdress and Vest).

CLASS 29. HAND-KNIT WOOLLEN SOCKS, 4-ply, Plain Knitting.—PREMIUMS £2, £1, and 10s.

1st	No. 425	Duff, Mrs James, 20 Park Crescent, Scone, Perthshire.
2nd	No. 431	Hardie, Mrs J., 8 The Row, Lauder.
3rd	No. 433	Hogg, Miss Janet, Upper Senwick, Kirkcudbright.
V	No. 447	Ross, Mrs R., Woodside Cottage, Keig, Aberdeenshire.
H	No. 444	Pithie, Miss M., 21 Henry Street, Langholm.
C	No. 432	Hogg, Miss Helen C., Upper Senwick, Kirkcudbright.
C	No. 437	M'Kenzie, Mrs, 21 Oakbank Place, Winchburgh.

BUTTERMAKING COMPETITIONS

CHAMPIONSHIP CLASS.

Gold Medal.

No. 16 Duncan, Miss Mary J. S., Muirton Mains, Fairburn, Muir of Ord, Ross-shire.

Silver Medal.

No. 55 Smith, Miss Lilla, Hayden Villa, Staverton, Cheltenham.

OPEN CLASS—SECTION 1.

PREMIUMS, £5, £3, £2, and £1.

1st No. 1 Braes, Miss Isa M., Woodhead Farm, Newmills, Fife.
2nd No. 6 Crawford, Miss Agnes C. P., Hatton Mains, Kirknewton, Midlothian.
3rd No. 2 Brown, Miss Flora F., Brackenhirst Farm, Glenmaris, Airdrie.
4th No. 3 Bruce, Miss Helen B., Ferrymuir Farm, Cupar, Fife.
V No. 4 Campbell, Miss Janet C., Barbarafield Farm, Cupar, Fife.
H No. 8 Finlayson-Bayne, Miss Jessie, Rosebank Mains, Dunfermline.
C No. 7 Ferguson, Miss Martha, East Camps, Carnock, Dunfermline.

OPEN CLASS—SECTION 2.

PREMIUMS, £5, £3, £2, and £1.

1st No. 17 Eustice, Miss Olga, Bezurrel, Gwinear, Hayle.
2nd No. 19 MacGregor, Miss Margaret, South Bellyeoman Farm, Dunfermline.
3rd No. 16 Duncan, Miss Mary J. S., Muirton Mains, Fairburn, Muir of Ord, Ross-shire.
4th No. 13 Alexander, Miss Elizabeth J. M., Cautens, Oldmeldrum, Aberdeenshire.
V No. 18 Holmes, Miss Janet, 5 Clutha Place, Uddingston.
H No. 14 Cursiter, Miss Annie A., Braeside, Stenness, Orkney.
C No. 23 Prentice, Miss Jean F., Bogside, Carluke.

OPEN CLASS—SECTION 3.

PREMIUMS, £5, £3, £2, and £1.

1st No. 24 Bewick, Miss Evelyn, Rectory Farm, Arkleby, Aspatria, Cumberland.
2nd No. 44 Telford, Richard, Lathallan Home Farm, Colinsburgh, Fife.
3rd No. 29 Duncan, Andrew B., 23 Craigie Road, Ayr.
4th No. 25 Braes, Miss Jenny M., Woodhead Farm, Newmills, Fife.
V No. 26 Cochrane, Miss Helen C., Auchincruive, Ayr.
H No. 28 Dow, Miss Lily, Brotherton, West Calder.
C No. 33 Smith, Miss Agnes, Addiewell Farm, West Calder.

OPEN CLASS—SECTION 4.

PREMIUMS, £5, £3, £2, and £1.

1st	No. 38	Edmunds, Miss Nan E., Strathallan Castle Dairy, Auchterarder.
2nd	No. 40	M'Intyre, Hugh, East Kirkcarsewell, Dundrennan, Castle Douglas.
3rd	No. 43	Potter, Miss Christina, Crossgreen Farm, Uphall, Broxburn.
4th	No. 42	Patterson, Robert M., India Street Cottages, Alexandria, Dumbartonshire.
V	No. 45	Wilson, John, Kellochside, Ochiltree, Ayrshire.
H	No. 37	Craib, Miss Rena, Greenmyre, Kingoldrum, Kirriemuir.
C	No. 35	Bishop, Miss Janet, Gallowridge, Culross, Fife.

OPEN CLASS—SECTION 5.

PREMIUMS, £5, £3, £2, and £1.

1st	No. 53	Olde, Miss Monica M., Clifton House, Boscastle, Cornwall.
2nd	No. 54	Peer, Miss P., Rectory Farm, Tibberton, near Droitwich.
3rd	No. 55	Smith, Miss Lilla, Hayden Villa, Staverton, Cheltenham.
4th	No. 47	Browning, Miss Dora, The Storks, Ombersley, Worcs.
V	No. 46	Bauchope, Miss Henribell, The Quinloch, Blanefield, Stirlingshire.
H	No. 51	M'Ara, Miss Mitchell, Mains of Callander, Crieff.
C	No. 48	Gilchrist, Miss Catherine A., East Trodigal, Machrihanish, by Campbeltown.

SHOE-MAKING COMPETITION

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Eire (Irish Free State).

Piece of Plate, given by the Scottish Iron & Steel Co., Ltd., Glasgow, *to the winner of First Prize.*

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize.*

Gold Medal, given by Mustad Horse Nail Company, *to the winner of Third Prize.*

1st Prize, £5 and Piece of Plate; 2nd Prize, £4 and Canteen of Cutlery; 3rd Prize, £3 and Gold Medal; 4th Prize, £2; and 5th Prize, £1.

1st	No. 32	Stephen, William, Brotherton Smithy, Johnshaven, Montrose.
2nd	No. 35	Davidson, Alexander, Sunny Bank, Craigellachie, Banffshire.
3rd	No. 15	Redford, Alexander, Jun., Battelby Smithy, Redgorton, Perthshire.
4th	No. 26	Godsman, David, 128 Main Street, Aberchirder, Huntly, Aberdeenshire.
5th	No. 19	Stephen, Ralph A., 19 Victoria Street, Montrose.
V	No. 28	Nicol, Alexander, Muir of Breda, Alford, Aberdeenshire.
H	No. 37	Smith, John F., Collithie Smithy, Gartly, Aberdeenshire.
C	No. 36	Blackie, John, Ryslaw Smithy, Duns, Berwickshire.
C	No. 34	Redford, Jack, Cargill Smithy, Meikleour, Perthshire.
C	No. 4	Crichton, George G., Livery Street, Bathgate, West Lothian.
C	No. 45	Borthwick, Richard, Mossend Smithy, Gorebridge, Midlothian.
C	No. 41	Nicol, William, The Forge, Millbank, Cluny, Tillyfourie, Aberdeenshire.

HORSE-SHOEING COMPETITION

Open to Shoeing-Smiths from any part of Great Britain, Northern Ireland, and Eire (Irish Free State).

Gold Watch, given by Messrs William Martin, Sons, & Co., Coatbridge, *to the winner of First Prize.*

Canteen of Cutlery, given by Messrs Neilson & Cleland, Ltd., Coatbridge, *to the winner of Second Prize.*

Gold Medal, given by National Master Farriers' and Blacksmiths' Association, *to be awarded to the competitor obtaining the highest number of points.*

Gold Medal, given by the Mustad Horse Nail Company, *to the winner of Third Prize.*

Gold Medal, given by Capewell Horse Nail Company, *to the winner of Fourth Prize.*

FARM HORSES—1st Prize, £5, Gold Watch, and Gold Medal; 2nd Prize, £5 and Canteen of Cutlery; 3rd Prize, £5 and Gold Medal; 4th Prize, £4 and Gold Medal; 5th Prize, £3; 6th Prize, £2; 7th Prize, £2; 8th Prize, £1; and 9th Prize, £1.

1st	No. 29	Stephen, Ralph A., 19 Victoria Street, Montrose.
2nd	No. 43	Blackie, John, Ryslaw Smithy, Duns, Berwickshire.
3rd	No. 14	Stephen, William, Brotherton Smithy, Johnshaven, Montrose.
4th	No. 15	M'Donald, Ian, Castlehill Smithy, Kintore, Aberdeenshire.
5th	No. 35	Crichton, George G., Livery Street, Bathgate, West Lothian.
6th	No. 7	Nicol, Alexander, Muir of Breda, Alford, Aberdeenshire.
7th	No. 12	Hewit, John, Heiton, Kelso.
8th	No. 21	Smith, John F., Collithie Smithy, Gartly, Aberdeenshire.
9th	No. 40	Borthwick, Richard, Mossend Smithy, Gorebridge, Midlothian.
V	No. 39	M'Rae, John, Jun., Knowenack, Kirkmuirhill, Lanark.
H	No. 38	Stevenson, William, Rose Cottage, Torphichen, Bathgate, West Lothian.
C	No. 37	Jeffrey, William, 22 Winton Place, Tranent, East Lothian.
C	No. 20	Stephen, James, 19 Victoria Street, Montrose.
C	No. 33	Borthwick, James, Mossend Smithy, Gorebridge, Midlothian.
C	No. 19	Sutherland, William B., Paterson's Lane, Thurso, Caithness.

LIVE STOCK JUDGING COMPETITION

Open to all persons 18 years and under 23 years of age at the date of the Competition.

'Glasgow Herald' Challenge Cup, value £50, *awarded each year to the team winning the First Prize in the Team Competition.* Given by Messrs George Outram & Co., Ltd., Glasgow.

West Perthshire and Dumbartonshire Young Farmers' Club (Team A), 280 points.

Gold Medal, *awarded to the highest individual scorer.* Given by Messrs George Outram & Co., Ltd., Glasgow.

Logan, John, Powis Mains, Stirling, 68 points.

INDIVIDUAL COMPETITION.

PRIZES, £5, £4, £3, £2, and £1.

1st		Logan, John, Powis Mains, Stirling	68 points.
2nd	equal	Kirk, Miss Jenny C., Ramornie Mill, Ladybank	62 ,,
3rd		Baillie, David A., Bannaty, Milnathort	62 ,,
4th		M'Ewen, John W., Arnprior, Kippen	62 ,,
5th		Hislop, James F., Stenmuir, Greenlaw	60 ,,

TEAM COMPETITION.

PRIZES
1st, £10 and 5 Medium Silver Medals.
2nd, £5 and 5 Medium Bronze Medals.

1st	West Perthshire and Dumbartonshire Young Farmers' Club (Team A)	280 points.
2nd	St Boswells and District Junior Agricultural Club	254 ,,

Special Prize *for College team placed highest in Competition*—£5.

West of Scotland Agricultural College (Men's Team), 190 points.

POULTRY JUDGING COMPETITION

(Arranged in co-operation with the Scottish Association of Young Farmers' Clubs.)

Open to Competitors under 26 years of age at the date of the Competition.

INDIVIDUAL COMPETITION.

PRIZES, £3, £2, and £1, and 10s., and an extra prize of 10s.

1st		Archibald, Henry, Brucefield, Shotts	591 points.
2nd	equal	Miller, Robert C., Boghead Farm, Dumbarton	585 „
3rd		Austin, Miss G., Concraig, Crieff	585 „
4th	equal	Graham, Miss M., Gortonlea, Lasswade	575 „
		White, Miss J., Cauldcoats, Linlithgow	575 „

TEAM COMPETITION.

PRIZES { 1st, £5 and 3 Medium Silver Medals.
2nd, £2 and 3 Medium Bronze Medals.

1st	Lanarkshire	1701 points.
2nd	Dumbartonshire	1656 „

NEW IMPLEMENTS

The Judges, having inspected the new implements submitted for competition, awarded a Silver Medal to—

Gray, Eddie T. Y., Fairbank Sectional Building Works, Fetterangus, Mintlaw Station, Aberdeenshire—the "Auto-Simplex" Tractor Tipped Tractor Trailer (No. 2001).

JUDGES.

Shorthorn—Norman N. Lee, Stonelands, Arncliffe, Skipton-in-Craven; John MacKenzie, Balnain, Conon Bridge, Ross-shire.

Aberdeen-Angus—A. W. Howison of Lochbank, Blairgowrie; C. F. Tulloch, Braevail, Nairn.

Galloway—Walter Biggar, Grange Farm, Dalbeattie.

Belted Galloway—Thomas Hamilton, Whiteside, Gatehouse-of-Fleet.

Highland Cattle—John Brown, Kilmore, Oban.

Ayrshire—Alexander Kirkpatrick, Barr, Sanquhar; Andrew Woodburn, Holehouse, Galston.

British Friesian—G. J. Curtis, Berwick Manor Farm, Rainham, Essex; J. L. Nisbet, Easter Newton, Kirknewton.

Clydesdale—Robert Dalziel, Rue, Auldgirth, Dumfriesshire; Peter Dewar, 54 St Alban's Road, Edinburgh; George M'Dowall, Briarbrae, Stranraer; John Stirling, Parkhead, Alloa.

Percheron—H. H. Truman, The Maze, March, Cambs.

Hunters: Breeding Classes—The Hon. Justice Wylie, Clonsilla House, Clonsilla, Co. Dublin.

Hunters: Saddle Classes—J. J. Paterson, Terrona, Langholm, Dumfries.

Hacks of Hunter Type and Riding Ponies—Captain The Hon. Arthur Baillie, Fenny Compton Wharf, Leamington Spa.

Hill Ponies—J. J. Paterson, Terrona, Langholm, Dumfries.

Highland and Western Island Ponies—James Cairns, West Biggs, Blackford, Perthshire.

Shetland Ponies—Major William Logan, O.B.E., Suddie House, Munlochy, Ross-shire.

Hackneys in Harness—Major William Logan, O.B.E., Suddie House, Munlochy, Ross-shire.

Draught Geldings in Harness—Robert Dalziel, Rue, Auldgirth, Dumfriesshire.

Lorry and Van Horses in Harness—Major William Logan, O.B.E., Suddie House, Munlochy, Ross-shire.

Blackface—L. D. M'Laren, Touchmollar, Stirling; Robert M'Naughton, Tighnablair, Comrie.

Cheviot—Thomas Elliot, Kirndean, Newcastleton; William A. Thomson, Dalpeddar, Sanquhar.

Border Leicester—James Findlay, Bogardo, Forfar; John Jeffrey, Deuchrie, Dunbar.

Half-Bred—John L. Arnott, Haymount, Makerstoun, Kelso.

Oxford Down—Robert Forrest, Preston, Duns.

Suffolk—H. C. Rush, Hall Farm, Newmarket.

Goats—Dr J. N. Pickard, King's Buildings, West Mains Road, Edinburgh.

Large White—James Allsup, Beech House, Poulton-le-Fylde, Lancs.

Large Black—Hubert Groom, Northgate Hall, Warham, Wells, Norfolk.

Essex—Sam Woodiwiss, Sedgemere, Great Waltham, Essex.

Poultry—H. S. Anthony, Euxton, Chorley, Lancs.—Classes 1 to 12, 23 to 34, 45 to 51, 96 to 113; J. H. Hartley, Holme Gate, Houghton, Carlisle—Classes 17 to 22, 55 to 81, 114 to 118; David Reid, Firth View, Port Gordon—Classes 13 to 16, 35 to 44, 52 to 54, 82 to 95.

Dairy Produce—Robert H. Lawson, c/o William Lawson & Sons, 21 College Lane, Glasgow.

Honey, &c.—James Cunningham, Edinburgh and East of Scotland College of Agriculture, 13 George Square, Edinburgh.

Rural Industries—Miss Bruce, 111A George Street, Edinburgh—Classes 1, 2, 3, 4, 5, 6, 7, 8, 9, 18, 19, 20, 27, 29; Miss Barbara Macfie, 17 Wester Coates Terrace, Edinburgh—Classes 10, 11, 12, 13, 24, 25, 26, 28; Henry G. Paterson, 12 Dryden Place, Edinburgh—Classes 14, 15, 16, 17, 21, 22, 23.

Buttermaking Competitions—William R. Alexander, Scottish Milk Marketing Board, 95 Bothwell Street, Glasgow—Open Sections; William Smith, 10 Rutland Square, Edinburgh—Championship.

Horse-shoeing and Shoe-making—Arthur Gofton, F.R.C.V.S., City of Edinburgh Veterinary Department, Johnston Terrace; William Stephen, Balmellie Street, Turriff; Peter Story, Stichill, Kelso.

STEWARDS.

Cattle.—J. E. Kerr of Harviestoun, Dollar.

Horses.—George Grant of Glenfarclas, Blacksboat.

Sheep, Goats, and Pigs. — James M'Laren, Cornton, Bridge of Allan.

Poultry.—James R. Lumsden of Arden, Dumbartonshire.

Forage.—John W. Prentice, Longcarse, Alloa.

Implements.—Sir Joshua Ross-Taylor, Mungoswalls, Duns.

Flower Show.—A. A. Hagart Speirs of Elderslie, Houston House, Renfrewshire.

Special Events.—Alexander Murdoch, East Hallside, Cambuslang.

Grand Stands.—Major Robert W. Sharpe of The Park, Earlston.

Gates.—Ian M. Campbell, Bal Blair, Invershin.

Catering, Bees, Honey, &c.—Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.

ASSISTANT STEWARDS.

Cattle.—James Wyllie, Tinwald Downs, Dumfries.

Horses.—John P. Sleigh of St John's Wells, Fyvie.

Sheep, Goats, and Pigs.—William I. Elliot, Middletoun, Stow.

Forage.—T. Mercer Sharp, Bardrill, Blackford.

Implements.—James Paton, Kirkness, Glencraig.

Special Events. — Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.

Grand Stands.—Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

Gates.—Alexander Forbes, Rettie, Banff; James Wither, Awhirk, Stranraer.

ATTENDING MEMBERS.

Shorthorn.—*Robert Park, David Blair,* William Alexander, William Duncan, R. H. Watherston.

Aberdeen-Angus.—*James Paton, John D. Allan,* John Armour, William D. Simpson, George Snowie.

Galloway.—*G. Bertram Shields, R. Wemyss Honeyman,* William Carnegie, James Sharp.

Belted Galloway.—*Thomas Clark, Lieut.-Colonel Garden Beauchamp Duff,* Ian C. Menzies, James Pettigrew.

Highland Cattle.—*William Montgomery,* J. Milne Henderson, William R. Milne, Bailie Thomas Sawers.

Ayrshire. — *Thomas Templeton, Captain Ian S. Robertson,* William Crawford, Bailie George Gibson, Gilbert Sloan.

British Friesian.—*Peter W. Crawford, James Clark,* John Cochrane, Bailie James Edward, John Weddell.

Clydesdale Stallions and Colts. —*George G. Mercer, Matthew Mather,* David Allison, James S. Fullarton, Andrew Hamilton.

Clydesdale Geldings.—*Alexander Murdoch, A. W. Montgomerie,* Hugh Elder, T. Harvie Marshall.

Clydesdale Mares and Fillies.—*Finlay MacGillivray, John Kerr,* William Allison (Campend), James Hamilton, Jun., J. C. Wallace Mann.

Percheron.—Alexander Y. Allison, James Young, Jun.

Hunters.—*Major Robert W. Sharpe, R. Scott Aiton,* John M. Allison, John Cadzow, Treasurer Will Y. Darling.

Riding Ponies.—*The Earl of Home, K.T., Major Robert W. Sharpe,* Alexander N. Dudgeon.

Hill Ponies.—*The Earl of Home, K.T., Major Robert W. Sharpe,* William H. Barr, Councillor Sir William W. M'Kechnie, K.B.E.

Highland and Western Island Ponies.—Lieut.-Colonel Gordon Dalyell of the Binns, C.I.E., Mark C. Morrison.

Shetland Ponies.—*Robert Miller, John G. Dudgeon,* Alan U. Cunningham, Robert L. Scarlett.

Hackneys in Harness.—*Thomas Clark, William Brown,* Allan Stevenson, Bailie Andrew H. A. Murray.

Draught Geldings in Harness.—*Alexander Murdoch, A. W. Montgomerie,*

Lorry and Van Horses in Harness. —*Alexander Murdoch, A. W. Montgomerie,*

Blackface.—*The Master of Polwarth,* Alexander Fleming, James C. Jeffrey, Andrew P. B'. Kerr.

Cheviot.—*Francis W. Walker, William Brown,* R. W. Grieve, Phipps O. Turnbull.

Border Leicester.—*Major Sir Samuel Strang Steel, Bt., David S. Hutcheson,* Archibald Dods, Robert B. Kerr, James Lowrie.

Half - Bred. — *William Meiklem,* Howard U. Cunningham, James W. Murray.

Oxford Down.—*T. Mercer Sharp,* John Nimmo, Lord Dean of Guild William Watt Finlayson.

Suffolk.—*J. W. Alexander,* Mark Slight, Archibald Wood.

Goats.—*William Allison (Almond Hill),* MacKight C. Cowper.

Large White.—*John Robertson,* John Amour, Peter M'Laren.

Large Black.—*J. M. Dunlop,* R. Hunter Murray.

Essex. — *James Wither,* William Bruce, M.A., B.Sc.

Poultry.—*Dr J. F. Tocher,* Alexander M'Callum, M.A., LL.B., Bailie George Rhind, Professor Ernest Shearer, John White.

Dairy Produce.—James Cadzow.

Honey, &c. — J. Martin, Bailie William D. Hardie.

Rural Industries.—Bailie Thomas Dickson, Bailie Charles Mackenzie, Bailie William Taylor.

Buttermaking Competitions.—*T. G. Wilson,* Mrs D. G. More.

Horse-Shoeing and Shoe-Making. —*Peter W. Crawford, J. M. Dunlop, G. Bertram Shields,* William Gillespie, William M'Dougall, T. Blair.

Flower Show.—*A. A. Hagart Speirs,* Councillor James Miller.

VETERINARY DEPARTMENT.

CLASS EXAMINATIONS, 1939.

Silver Medals were awarded to the following :—

GLASGOW VETERINARY COLLEGE.

Chemistry	R. M. Wilson, Glasgow.
Biology	William Stewart, Girvan.
Senior Anatomy	Robert Auld, Stewarton.
Junior Anatomy	J. B. Bayliss, Wishaw.
Physiology	Miller Watson, Glasgow.
Zootechny	Fergus A. Tufts, U.S.A.
Pathology	Andrew Wilson, Hull.
Hygiene	W. W. Black, Glasgow.
Surgery	D. W. Donaldson, West Kilbride.
Medicine	Adam V. Farrell, Dumfries.
Histology	I. C. Bryson, Motherwell.
Pharmacology	J. C. Wilson, Dumbarton.
Parasitology	Andrew Wilson, Hull.

13 Large Silver Medals, £12, 0s. 6d.

ROYAL (DICK) VETERINARY COLLEGE.

Chemistry	R. R. A. Coombs, South Africa.
Biology	R. R. A. Coombs, South Africa.
Senior Anatomy	D. W. Owen, Criccieth.
Junior Anatomy	W. Tait, Terregles.
Physiology	D. G. Keswani, India.
Zootechny	J. Lang, Chelmsford.
Pathology	A. M'Diarmid, Edinburgh.
Hygiene	I. M. Brown, New Zealand.
Surgery	W. S. Biggar, Dalbeattie.
Medicine	A. J. MacLennan, Edinburgh.
Histology	J. G. Brotherstone, Dalkeith.
Pharmacology	J. Cruickshanks, Kirriemuir.
Parasitology	J. Millar, Newton Stewart.

13 Large Silver Medals, £12, 0s. 6d.

DISTRICT COMPETITIONS, 1939.

25 Districts—	22 Grants of £12 each ; 1 of £11, 10s. ; 1 of £11, 9s. ; and 1 of £8, 10s.	£295	9	0
15 ,,	Grants of £15 each	225	0	0
	Special Grants : Medals, £10, 10s.	181	0	0
	Medals for Shows (51 large)	47	3	6
	Premiums and Medals for Cottages, Gardens, &c.	5	17	0
25 ,,	Medals for Hoeing Competitions, 1938-39	9	13	9
118 ,,	Medals for Ploughing, 1938-39	59	0	0
Long Service Certificates, £31, 3s. 11d. ; Gold Medals, £43, 4s. 6d. ; and Silver Medals, £25, 14s. 6d. (1938-39)		100	2	11
		£923	6	2

ABSTRACT OF PREMIUMS.

District Competitions	£823	3	3
Long Service Awards	100	2	11
Veterinary Colleges (26 Medals)	24	1	0
	£947	7	2

DUMFRIES SHOW, 1938.

ALTERATIONS IN PRIZE LIST.

On account of animals failing to comply with the Regulations as to calving and foaling, the following changes have taken place in the list of animals for which prizes were awarded:

CATTLE.

SHORTHORN.

CLASS 7. COW or HEIFER, born on or after 1st December 1935, and before 1st December 1936.—PREMIUMS, £10, £5, £3, and £2.

*	No. 23	Robertson, Major William B., Colton, Dunfermline, Heifer, "Scotston Lavender Lass" (191,842).
1st	No. 21	Black, H. S., Banchory, Coupar-Angus, Cow, "Broadhooks Nanette 7th" (185,045).
2nd	No. 22	Hill, R. Wylie, of Balthayock, Perth, Heifer, "Balthayock Butterfly 12th" (188,261).

ABERDEEN-ANGUS.

CLASS 16. COW or HEIFER, born on or after 1st December 1935, and before 1st December 1936.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 64	Kennedy, Colonel Norman, D.S.O., of Doonholm, Ayr, Heifer, "Margaux of Doonholm" (112,501).
*	No. 65	Macbeth, W. Gilchrist, of Dunira, Comrie, Heifer, "Florette of Borgie" (113,125).
2nd	No. 68	Zetland, The Marquess of, P.C., G.C.S.I., G.C.I.E., Aske, Richmond, Yorks., Heifer, "Aunita of Stonefold" (111,317).
3rd	No. 61	Beddie, J. & A., Banks, Strichen, Heifer, "Gammer Eviana" (111,076).
*	No. 63	Jenkins, G. J., Mount Annan, Annan, Heifer, "Lauretta of Pitskelly" (113,333).
4th	No. 66	Russell, G. H., of The Burn, Glenesk, Brechin, Heifer, "Proud Backwena of The Burn" (113,589).
C	No. 67	Strathmore Estates, Estates Office, Glamis, Heifer, "Effie 3rd of Balvack" (111,628).
C	No. 62	Ivory, Basil G., Binny House, Uphall, West Lothian, Heifer, "Grateful of Bywell" (110,976).

The animals failing to qualify are marked thus (*).

BELTED GALLOWAY.

CLASS 28. COW or HEIFER, born before 1st December 1935, in Milk or in Calf; if in calf and not in milk, to calve on or before 1st December of the year of the Show.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 184	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, Cow, "Gartmore Helen II." (3328 B).
*	No. 179	Brown, J. Douglas, Corseyard, Kirkcudbright, Cow, "Knockbrex Joy" (3102 B).
2nd	No. 183	Miller, John R., Midkolton, Castle Douglas, Heifer, "Cloak Village Belle" (3868 B).
3rd	No. 185	Newbigging, Dr T. Duncan, Kirkton of Crawford, Abington, Lanarkshire, Cow, "Kirkton Alice 78th" (3902 B).
4th	No. 182	Hamilton, Mrs R., Glenrazie, Newton Stewart, Cow, "Mochrum Countess of Craigeach" (3396 B).
H	No. 181	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, Cow, "Gartmore Grace III." (1032 B).
C	No. 186	Newbigging, Dr T. Duncan, Kirkton of Crawford, Abington, Lanarkshire, Cow, "Kirkton Alice 39th" (3900 B).

CLASS 29. HEIFER, born on or after 1st December 1935, and before 1st December 1936.—PREMIUMS, £10, £5, £3, and £2.

1st	No. 188	Brown, J. Douglas, Corseyard, Kirkcudbright, "Knockbrex Narcissus" (3614 B).
2nd	No. 189	Brown, J. Douglas, Corseyard, Kirkcudbright, "Knockbrex Naomi" (3612 B).
*	No. 193	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Winifred VIII." (3660 B).
3rd	No. 192	Nalc Co., Ltd. (per Sir August Cayzer, Bt.), Estates Office, Gartmore, Perthshire, "Gartmore Dandy IX." (3636 B).
*	No. 190	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Gartmore Christian VI." (3632 B).
*	No. 191	Hamilton, General Sir Ian, G.C.B., 1 Hyde Park Gardens, London, "Lullenden Bell" (3706 B).
4th	No. 194	Newbigging, Dr T. Duncan, Kirkton of Crawford, Abington, Lanarkshire, "Kirkton Alice 19th" (3892 B).
C	No. 195	Newbigging, Dr T. Duncan, Kirkton of Crawford, Abington, Lanarkshire, "Kirkton Alice 11th" (3882 B).

HIGHLAND.

CLASS 35. HEIFER, born on or after 1st December 1934, and before 1st December 1935.—PREMIUMS, £10, £5, £3, and £2.

*	No. 216	Morrison, John G., of Islay, Islay Estates Office, Bridgend, Isle of Islay, "Ribhinn Ile" (10,991).
*	No. 215	Mansfield Estates, Balboughty, Perth, "Corona" (11,110).
1st	No. 217	Thomson, Misses S. W. & B. L., of Glenpark, Balerno, Midlothian, "Cairn of Glendarroch" (10,923).
*	No. 214	Dalgleish, James P., of Barbreck, Lochgilphead, Argyll, "Lady Buidhe of Barbreck" (10,977).
2nd	No. 213	Currie, John J., Cuilfail, Kilmelford, by Oban, "Proisag Caoimhneil of Maolachy" (11,002).
*	No. 218	Thomson, Misses S. W. & B. L., of Glenpark, Balerno, Midlothian, "Kip of Glendarroch" (10,922).
*	No. 219	Walker, Francis W., of Leys, Leys Castle, Inverness-shire, "Mairi II. of Leys" (10,997).

The animals failing to qualify are marked thus (*).

HORSES.

CLYDESDALE.

CLASS 64. YELD MARE, born before 1935.—PREMIUMS, £15, £9, £6, and £4.

*	No. 486	Kilpatrick, James, Craigie Mains, Kilmarnock, "Seaham Ideal Lady."
*	No. 487	M'Dowall, George, Briarbrae, Stranraer, "Baroness."
*	No. 484	Goldie, David, Barassie, Troon, "Barassie Winifred" (63,204).
1st	No. 483	Dalziel, Robert, Rue, Holywood, Auldgirth, Dumfriesshire, "Rue Golden Gleam."
*	No. 482	Broatch, George, Dryfesdalegate, Lockerbie, "Dryfe Perfect Lady."
2nd	No. 481	Borgue House Estates, Ltd., Borgue House, Kirkcudbright, "Borgue Belle" (61,064).
*	No. 485	Jackson, R. & D., Reedyloch, Edrom, Berwickshire, "Beneventa."

The animals failing to qualify are marked thus (*).

STATE OF THE FUNDS

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

As at 30th NOVEMBER 1939

GENERAL FUNDS

I. British Government Securities—		
£25,000 3½ per cent War Loan, at 92¼ . . .		£23,062 10 0
£1,679, 19s. 4d. 2½ per cent Consolidated Stock, at 68 . .		1,142 3 6
£20,000 3½ per cent Conversion Loan, at 92¾ . . .		18,550 0 0
£2,500 3 per cent Do. do. at 97½ . .		2,437 10 0
£5,000 3 per cent Funding Loan, at 92½ . . .		4,625 0 0
£1,000 3 per cent Defence Bonds, at par . . .		1,000 0 0
		£50,817 3 6
II. Heritable Bonds—		
£2,500 at Commissioners' Rates - . . .		2,500 0 0
III. Railway Debenture and Preference Stocks—		
£17,050 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 66½ .	£11,338 5 0	
£11,554 Do. do. 4 per cent do., at 87½	10,109 15 0	
£16,105 London Midland and Scottish Railway Co 4 per cent Debenture Stock, at 92½	14,897 2 6	
£1,500 Do. do. 4 per cent Preference Stock, at 57½ . . .	862 10 0	
£703 Southern Railway Co. 4 per cent Debenture Stock, at 100½. . . .	706 10 4	
£450 Do. do. 5 per cent Preference Stock, at 88	396 0 0	
£112 Do. do. 5 per cent Guaranteed Stock, at 106½	119 5 8	
		38,429 8 6
IV. Bank Stocks—		
£5,365 0 0 Royal Bank of Scotland Stock, at 410 x.d. . . .	£21,996 10 0	
£2,218 16 5 Bank of England Stock, at 309½	6,867 4 11	
£1,777 0 0 Bank of Scotland Stock, at 52s. 6d. . . .	4,664 12 6	
2,850 "B" Shares, Barclays Bank, Ltd., at 65s. . . .	9,262 10 0	
		42,790 17 5
V. Colonial Government Stocks—		
£2,000 Western Australia Inscribed 4 per cent Stock (1942-62), at 97½ . .	1,950 0 0	
£2,000 New Zealand Government 5 per cent Inscribed Stock (1946), at 103½ . .	2,070 0 0	
£1,120 Victorian Government 3½ per cent Inscribed Stock (1929-49), at 94½ .	1,058 8 0	
		5,078 8 0
VI. Corporation Mortgage—		
£5,000 on Loan to Edinburgh Corporation at 4 per cent, maturing Martinmas 1944		5,000 0 0
VII. Temporary Loan—		
£2,000 on Loan to Edinburgh Corporation . . .		2,000 0 0
VIII. Deposit Receipt—		
Sum on Deposit with Royal Bank of Scotland . .		10,375 0 0
IX. Estimated Value of Building—		
8 Eglinton Crescent		5,000 0 0
X. Estimated Value of Furniture, Paintings, Books, &c. .		1,500 0 0
Carry forward . .		£163,490 17 5

Brought forward	£163,490 17 5
XI. **Arrears of Subscriptions** considered recoverable	245 18 6
XII. **Balances** at 30th November 1939	1,185 17 1
Amount of General Funds	£164,922 13 0

SPECIAL FUNDS.

Tweeddale Gold Medal Fund—		
£605 London and North-Eastern Railway Co. 4 per cent Debenture Stock, at 87½		£529 7 6
£100 3 per cent Local Loans Stock, at 79¾		79 15 0
Sum on Current Account with British Linen Bank		21 5 9
		£630 8 3
Fife and Kinross Perpetual Gold Challenge Cup Fund—		
£268 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 66½	£178 4 5	
£201 Do. do. 4 per cent First Guaranteed Stock, at 73½	147 14 9	
Sum on Deposit Receipt with British Linen Bank	44 4 6	
Sum on Current Account with British Linen Bank	10 11 3	
		380 14 11
Paisley Perpetual Gold Challenge Cup Fund—		
£802 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 66½	£533 6 7	
Sum on Deposit Receipt with British Linen Bank	96 5 3	
Sum on Current Account with British Linen Bank	3 8 7	
		633 0 5
Renfrewshire Perpetual Gold Challenge Cup Fund—		
£668 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 66½	£444 4 5	
Sum on Deposit Receipt with British Linen Bank	88 17 2	
Sum on Current Account with British Linen Bank	18 8 7	
		551 10 2
William Taylor Memorial Prize Fund—		
£401 London and North-Eastern Railway Co. 3 per cent Debenture Stock, at 66½	£266 13 4	
Sum on Deposit Receipt with British Linen Bank	74 11 5	
Sum on Current Account with British Linen Bank	44 2 7	
		385 7 4
William Duthie Perpetual Silver Challenge Cup Fund—		
£260 2½ per cent Consolidated Stock, at 68	£176 16 0	
Sum on Current Account with British Linen Bank	7 4 8	
		184 0 8
The James Archibald Prize—		
£621, 1s. 6d. 3½ per cent War Loan, at 92¼	£564 12 10	
Sum on Current Account with Royal Bank of Scotland	10 14 2	
		575 7 0
Kinmonth Gold Quaich Fund—		
£46, 13s. 6d. 3½ per cent War Loan, at 92¼	£43 1 2	
Sum on Current Account with British Linen Bank	1 7 0	
		44 8 2
Amount of Special Funds		£3,384 16 11

Edinburgh, *3rd January* 1940.—As Auditor of the Highland and Agricultural Society of Scotland, I have examined the Securities for the Investments as detailed in the above State of the Funds and have found them in order. The Titles to the Heritable Estate and the Bonds for Sums lent on Heritable Security are certified by the Society's Law Agents to be in order.

GEO. JAMES GREGOR, C.A.

F. J. CARRUTHERS, *Hon. Secretary.*
R. F. BREBNER, *Chairman of Directors.*

ABSTRACT of the ACCOUNTS of the HIGHLAND and

CHARGE.

1. **Balances** at 30th November 1938		£1,071 2
2. **Arrears** of Subscriptions outstanding at 30th November 1938	£277 10 6	
Whereof due by Members who have compounded for life, and whose arrears are thereby extinguished	19 0 0	
		258 10 6
3. **Interests and Dividends**—		
(1) Interests—		
On Heritable Bonds, less Income-tax	£310 18 10	
On Railway Debenture and Preference Stocks, do.	1,257 4 0	
On Colonial Government Stocks, do.	222 7 4	
On British Government Stocks, do.	1,564 16 6	
On Temporary Loans, do.	20 9 6	
	£3,375 16 2	
(2) Dividends on Bank Stocks, less Income-tax	1,268 12 5	
		4,644 8 7
4. **Subscriptions**—		
Annual Subscriptions	£2,367 15 0	
Life Subscriptions	997 7 0	
		3,365 2 0
5. '**Transactions**'—Sales and Other Receipts		37 1 6
6. **Income-tax** repaid for year to 5th April 1939		1,442 5 4
7. **Balance** of Receipts from Dumfries Show, 1938		242 1 3
8. **Receipts** from Edinburgh Show, 1939		25,290 4 4
9. N.D.D. **Examination** at Ayr, 1938—Refund of Expenses		111 14 6
10. **Investments** Repaid		12,516 15 5
11. **Miscellaneous**		21 14 1
Sum of Charge		£49,002 3 9

Edinburgh, 3*rd January* 1940.—As Auditor of the Highland and Agricultural
of the Society for the year ending 30th November 1939 and have found them to be
Accounts I have prepared an Account of Charge and Discharge of the Intromissions
1939, of which the above is an Abstract.

AGRICULTURAL SOCIETY of SCOTLAND for Year 1938-1939.

DISCHARGE.

1. Establishment Expenses—						
Salaries and Wages and Allowance for Cleaning				£3,512	0	0
Allowance to Mrs Cowie				100	0	0
Feu-duty, £21, 3s. 0d.; Rates and Taxes, £91, 5s. 6d.				112	8	6
Coal, Gas, and Electric Light				87	2	7
Insurances, £70, 8s. 1d.; Special Annuity Premium, £51, 3s. 9d.; Superannuation Scheme, £117, 16s. 8d.; Telephone and Telegrams, £64, 15s. 5d.; Repairs and Furnishings, £190, 5s. 4d.				494	9	3
				£4,306	0	4
2. Fee to Auditor of Accounts for 1937-1938				120	0	0
3. Education—N.D.A. Examination, 1939				31	15	11
4. Chemical Department—						
Fee to Chemist	£100	0	0			
Analyses for Members and Expenses	220	17	1			
				320	17	1
5. Veterinary Department—Medals to Students				24	1	0
6. Dairy Department—N.D.D. Examination, 1938				110	10	2
7. Dairy Department, 1939—						
Expenses of N.D.D. Examination held at Ayr	£244	8	2			
Less Entry Fees	167	9	6			
				76	18	8
8. Society's 'Transactions'				1,864	12	2
9. Ordinary Printing, £206, 5s. 3d.; Advertising, £40, 9s. 9d.; Stationery, Books, &c., £118, 0s. 4d.; Postages and Receipt Stamps, £114, 9s. 11d.				479	5	3
10. Retiring Allowance to Professor Stanfield, Consulting Engineer				150	0	0
11. Air Raid Precautions				41	5	6
12. Miscellaneous Payments				303	15	2
13. Balance of Expenses in connection with Dumfries Show, 1938				154	9	0
14. Expenses in connection with Edinburgh Show, 1939—Premiums, £3938, 15s. 0d.; Medals, £43, 8s. 0d; Expenses of Show, £16,384, 9s. 11d. (as per page 377)				20,366	12	11
15. Premiums and Medals for Local Shows and District Competitions				821	8	3
16. Certificates and Medals for Long Service				100	2	11
17. Expenses in connection with visiting sites for future Shows, attending Meetings, &c.				53	0	4
18. Empire Exhibition, 1938—Call on Guarantee				200	0	0
19. Special Grants—Animal Diseases Research Association, £200; Edinburgh and East of Scotland College—Demonstration Centre at Cupar, £100; Glasgow Veterinary College, £100; Royal (Dick) Veterinary College—Building Extension Fund, £500; Scottish Agricultural Organisation Society, £100; West of Scotland Agricultural College—Building Fund, £500; other Grants, £62, 2s. 0d.				1,562	2	0
20. Investments made—						
Cost of £1,000 3% Defence Bonds, at par	£1,000	0	0			
Sum on Mortgage with Edinburgh Corporation	5,000	0	0			
				6,000	0	0
21. Temporary Loans—Lodged	£5,000	0	0			
Less uplifted	5,000	0	0			
				..		
22. Deposit Receipt—Lodged				10,375	0	0
23. Arrears removed from Subscription List at 30th November 1939				108	11	6
24. Arrears of Subscriptions outstanding at 30th November 1939				245	18	6
25. Balances at 30th November 1939—						
On Account Current with Royal Bank of Scotland—						
Edinburgh Account	£987	0	0			
London Account	191	10	0			
	£1,178	10	0			
In hands of Secretary	7	7	1			
				1,185	17	1
Sum of Discharge				£49,002	3	9

Society of Scotland, I beg to report that I have examined the Books and Accounts correctly stated and sufficiently vouched and instructed. From the Books and of the Treasurer with the Funds of the Society for the year ending 30th November

GEO. JAMES GREGOR, C.A

F. J. CARRUTHERS, *Hon. Secretary.*
R. F. BREBNER, *Chairman of Directors.*

ABSTRACT of the ACCOUNTS

RECEIPTS.

1. AMOUNTS COLLECTED DURING SHOW—		
Gates		£11,459 8 8
Grand Stand		2,577 13 1
Catalogues and Awards Lists		807 3 11
Tickets sold—supplies, &c.		94 8 6
Chauffeurs' Tickets.		60 12 0
Cloak-Rooms and Lavatories		164 1 6
		£15,163 7 8
2. MOTOR ENCLOSURES		1,279 11 11
3. RENT OF STALLS—		
Implement and other Exhibits	£5,271 14 6	
Stock Exhibits, &c.	2,406 18 6	
		7,678 13 0
4. RENT OF REFRESHMENT BOOTHS		545 0 0
5. ADVERTISEMENTS IN CATALOGUE AND PREMIUM LIST		344 16 3
6. SUBSCRIPTIONS IN AID OF PREMIUMS		259 10 0
7. MISCELLANEOUS		19 5 6
		£25,290 4 4

Note.—To the credit balance of	£4923 11 5
Add Sums due by Exhibitors for fitting up of stands, &c., amounting to	165 14 1
Accounts due	20 10 0
	£5109 15 6
From the above balance there falls to be deducted Premiums undrawn at 30th November 1939	191 10 0
Making the probable surplus	£4918 5 6

EDINBURGH, *3rd January* 1940.

of the EDINBURGH SHOW, 1939.

PAYMENTS.

		£	s.	d.	£	s.	d.
1.	**Showyard**—						
	Fitting up of Showyard				£3,950	0	0
	Muirhead & Sons Ltd.—Hire of Timber				2,745	7	11
	Thomas Black & Sons Ltd.—Hire of Canvas . . .				1,794	3	5
	Rosettes, £44, 12s. 7d.; Penning and Cartage Charges on Poultry, £49, 0s. 0d.; Horse-Shoeing, £15, 16s. 0d.; Butter-making, £48, 11s. 10d.; Electric Light and Power, £35, 0s. 0d.; Hire of Sleepers and Cartage, £217, 6s. 2d.; Toilet Requisites, &c., £20, 15s. 10d.; Flower Show, £52, 0s. 0d.; Grant to S.W.R.I. towards fitting up Stand, £30, 0s. 0d.; Floral Decorations, £12, 10s. 0d.; Gas Supply, £8, 1s. 0d.; Showyard Signs, £52, 1s. 0d.; Miscellaneous, £21, 11s. 6d.				607	5	11
	Salary to John Reid, Showyard Erector				500	0	0
					£9,596	17	3
2.	**Forage and Bedding for Stock**				369	12	1
3.	**Police**				248	16	0
4.	**Travelling Expenses** of Judges, Stewards, and Staff . .				178	3	3
5.	**Hotels and Luncheons**—						
	Hotels for Directors, Stewards, and Judges .	£293	19	2			
	Luncheons in Showyard for Directors, Stewards, Judges, Attending Members, Pressmen, Staff, Breakfasts, and Teas	443	17	6			
					737	16	8
6.	**Assistants** and Show Staff				634	12	5
7.	**Music**, Military, and other Displays				1,161	0	4
8.	**Printing**, Members' Badges, Stationery, &c.				1,580	1	6
9.	**Advertising** and Bill-posting				1,266	18	3
10.	**Forestry** Exhibition, £40; Concert for Attendants, £6, 14s. 4d.				46	14	4
11.	**Veterinary Surgeon**				21	0	0
12.	**Show Treasurer**				100	0	0
13.	**Postages**				127	18	4
14.	**Post Office** and Telephones				13	0	5
15.	**Ambulance**				15	6	0
16.	**Insurances**				97	9	6
17.	**Miscellaneous**				189	3	7
					£16,384	9	11
18.	**Premiums** drawn at 30th November 1939				3,982	3	0
					£20,366	12	11
	Credit Balance . . .				4,923	11	5
					£25,290	4	4

F. J. CARRUTHERS, *Hon. Secretary.*
R. F. BREBNER, *Chairman of Directors.*
GEO. JAMES GREGOR, C.A., *Auditor.*

ABSTRACT of the ACCOUNTS of the

CHARGE.

I. **Funds** at 30th November 1938—			
£3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock			£2,650 0 0
£5,551, 16s. 3d. 3½ per cent Conversion Stock . . .			4,216 18 2
£500 Queensland 3½ per cent Inscribed Stock, 1950-70 . .			450 1 0
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock			611 10 6
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock			259 1 11
			£8,187 11 7
Balances with oyal Bank of Scotland—			
On Account Current		£495 5 1	
On Deposit Receipt		181 16 7	
			677 1 8
			£8,864 13 3
II. **Interest on Investments**—			
On £3,193 London and North-Eastern Railway Company 3 per cent Debenture Stock, for year to 30th June 1939		£95 15 10	
Less tax		26 6 10	
		£69 9 0	
On £5,551, 16s. 3d. 3½ per cent Conversion Stock, for year to 1st October 1939 .	£194 6 2		
Less tax . . .	53 8 6		
		140 17 8	
On £500 Queensland 3½ per cent Inscribed Stock, 1950-70, for year to 1st July 1939	£17 10 0		
Less tax . . .	4 16 2		
		12 13 10	
On £412 London Midland and Scottish Railway Company 4 per cent Debenture Stock, for year to 30th June 1939 . .	£16 9 6		
Less tax . . .	4 10 8		
		11 18 10	
On £190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock, for year to 30th June 1939 .	£7 12 0		
Less tax . . .	2 1 10		
		5 10 2	
			240 9 6
III. **Interest on Deposit Receipts**			3 18 8
IV. **Income-tax** repaid for year to 5th April 1939 . . .			91 4 0
Sum of Charge . .			£9,200 5 5

Edinburgh, 3rd *January* 1940.

ARGYLL NAVAL FUND for the Year 1938-1939.

DISCHARGE.

I. ALLOWANCES to nine Recipients as follows :—			
9 at £40 each			£360 0 0
II. MISCELLANEOUS PAYMENTS—			
Banks & Co., Ltd.—Cheque Books			3 10 0
III. FUNDS at 30th November 1939—			
£8,193 London and North-Eastern Railway Company 3 per cent Debenture Stock .		£2,650 0 0	
£5,551, 16s. 3d. 3½ per cent Conversion Stock .		4,216 18 2	
£500 Queensland 3½ per cent Inscribed Stock, 1950-70		450 1 0	
£412 London Midland and Scottish Railway Company 4 per cent Debenture Stock .		611 10 6	
£190 London Midland and Scottish Railway Company 4 per cent Guaranteed Stock .		259 1 11	
		£8,187 11 7	
Note.—The above Funds are entered at cost price. The market value at 30th November 1939 was £8,238, 12s. 0d.			
Balances with Royal Bank of Scotland—			
On Account Current . .	£238 18 7		
On Deposit Receipt . .	410 5 3		
		649 10	
			8,836 15 5
SUM OF DISCHARGE . .			£9,200 5 5

F. J. CARRUTHERS, *Hon. Secretary.*
R. F. BREBNER, *Chairman of Directors.*
GEO. JAMES GREGOR, C.A., *Auditor.*

VIEW OF RECEIPTS AND PAYMENTS for Year 1938-1939.

RECEIPTS.

Interest and Dividends			£4,644 8 7
Income Tax Repaid for year to 5th April 1939			1,442 5 4
			£6,086 13 11
Annual Subscriptions and Arrears received			2,271 15 6
Edinburgh Show—			
Receipts		£25,290 4 4	
Payments		20,366 12 11	
			4,923 11 5
			£13,282 0 10

PAYMENTS.

Establishment Expenses (see page 375)		£4,306 0 4	
Fee to Auditor for 1937-1938		120 0 0	
Chemical Department		320 17 1	
Veterinary Department		24 1 0	
Education		107 10 3	
Retiring Allowance to Consulting Engineer		150 0 0	
Society's 'Transactions'		1,827 1 8	
Ordinary Printing, Stationery, Advertising, and Miscellaneous Accounts		767 4 11	
Grants to Local Societies, &c.		921 11 2	
		£8,544 6 5	
Extraordinary Expenditure—			
Special Grants (see page 375)	£1,562 2 0		
Empire Exhibition Guarantee	200 0 0		
		1,762 2 0	
			10,306 8 5
Surplus			£2,975 12 5
Extraordinary Income—			
Life Subscriptions			997 7 0
Balance of Receipts			£3,972 19 5

F. J. CARRUTHERS, *Hon. Secretary.*
R. F. BREBNER, *Chairman of Directors.*
GEO. JAMES GREGOR, C.A., *Auditor.*

Edinburgh, 3rd *January* 1940.

PROCEEDINGS AT BOARD MEETINGS.

MEETING OF DIRECTORS, 5TH APRIL 1939.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—Ordinary Directors—Mr R. Scott Aiton; Mr J. W. Alexander; Mr John D. Allan; Mr David Blair; Mr William Brown; Mr Ian M. Campbell; Mr James Clark; Mr John E. B. Cowper; Mr Peter W. Crawford; Lieut.-Colonel Garden Beauchamp Duff, D.S.O.; Mr William I. Elliot; Mr J. E. Kerr; Mr Finlay MacGillivray; Mr James M'Laren; Mr William Meiklem; Mr A. W. Montgomerie; Mr William Montgomery; Mr Robert Park; Captain Ian S. Robertson; Sir Joshua Ross-Taylor; Mr T. Mercer Sharp; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Mr Francis W. Walker; Mr T. G. Wilson; Mr James Wither. *Extraordinary Directors*—Mr William Allison; Major R. F. Brebner; Mr Thomas Clark; Mr J. M. Dunlop; Mr George Grant; Mr James R. Lumsden; Mr Matthew Mather; Mr George G. Mercer; Mr Robert Miller; Mr Alexander Murdoch; Mr James Paton; Mr John W. Prentice; Mr John Robertson; Lord Rowallan; Mr Thomas Templeton; Mr James Wyllie. *Treasurer*—The Earl of Home, K.T. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—Mr J. F. Tocher, D.Sc., LL.D., F.I.C.

Illness of Chairman.

The Secretary read a letter from Mr James Durno, Chairman of Directors, expressing appreciation of the kind message and good wishes communicated to him from the Meeting of the Board on 1st March. He went on to say that he had now left the Nursing Home, and was steadily improving. He greatly regretted his inability to be present at that Meeting, but looked forward with hope to be able to attend at an early date.

Colonel F. J. Carruthers of Dormont, who, in the absence of Mr Durno, had been called to the Chair, expressed the hope of the members of the Board for Mr Durno's speedy recovery.

Congratulations to Mr Alexander Murdoch.

The Chairman, on behalf of the Board, extended to Mr Murdoch their congratulations on his appointment to the important office of Meat and Live Stock Officer for the South of Scotland under the Food Emergency Plans.

Edinburgh Show, 1939.

Shetland Sheep.—It was decided to accept, for exhibition only, a pen of Shetland Sheep which Sir John W. Buchanan-Jardine, Bt., of Castlemilk, Lockerbie, had offered to exhibit at the Show.

Scottish Command.—It was agreed to grant the Scottish Command a space 60 ft. by 60 ft., free of charge, for a Military Exhibit at the Show.

School Children.—The Secretary submitted correspondence which he had had with the Education Officer for the City of Edinburgh with regard to the admission of School Children to the Show on the Thursday and Friday. The proposed arrangements were generally approved, the charge for admission on Thursday afternoon to be 6d., and on Friday, 3d.; block booking to be arranged through the City Education Offices.

Junior Agricultural Clubs.—An application for a reduction in the admission charge to members of Junior Agricultural Clubs was considered, but it was agreed that this request could not be granted.

Physical Training Display.—The Secretary reported that he had been unsuccessful in his efforts to secure a Physical Training Display Team for the Show. He had approached the Queen Victoria School, Dunblane, the Royal Scots Fusiliers, and H.M.S. *Caledonia.*

On the motion of Lord Rowallan, it was agreed that inquiry be made of the S.E. Regional Committee of the National Fitness Council as to the possibility of that Body being prepared to provide a display.

Colouring of Sheep.

Further correspondence between the Society and the Society of Border Leicester Sheep Breeders was submitted.

On 2nd March a letter was sent to the Secretary of the Border Leicester Society, pointing out that the word "ridiculous," in connection with colouring, was taken to refer to sheep which were coloured with an obvious disregard to the recommendation made by the Council of that Society, that sheep exhibited at the 1939 Show should be coloured no higher than a light bloom. It was further mentioned, in connection with the appointment of the Joint Committee of Inspection, that it was anticipated that one of this Society's representatives would act as Chairman of the Joint Committee, and that he would have a casting vote in case of equality of votes.

On 7th March a reply was received from the Border Leicester Society, in which it was stated that, although allowance would have to be made to a certain extent for climatic conditions and difference in texture of fleece, sheep which were definitely over-coloured, contrary to the Council's recommendation, would be considered "ridiculously" coloured. It was not thought that any exception would be taken to one of the Highland Society Members of the Joint Committee acting as Chairman, and having a casting vote.

The Chairman said that it would appear from this correspondence that the matter was now satisfactorily settled.

Mr James M'Laren, Cornton, Bridge of Allan, moved that the following be the Society's representatives on the Joint Committee of Inspection: Sir Joshua Ross-Taylor, Mungoswalls, Duns; Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh; and Mr James W. Alexander of Newton, Golfhill, Moffat.

This was seconded by Mr George Grant of Glenfarclas, and agreed to.

It was decided that Sir Joshua Ross-Taylor be nominated Chairman of the Joint Committee.

Inverness Show, 1940.

It was decided that the date of the Show at Inverness in 1940 be fixed for the 18th to 21st June, inclusive.

Glasgow Veterinary College.

An application for a renewal of the grant of £100 for the current year was remitted to the Finance Committee for consideration and report.

Licensing of Boars.

A Report was submitted by Mr John E. B. Cowper, Gogar House, Edinburgh, on the proceedings at the Conference on the Licensing of Boars, which he attended in London on 27th March.

In supplementing this statement, Mr Cowper said that the consensus of opinion appeared to be in favour of a Licensing Scheme for Boars, and this view received the support of the Meeting.

Importation of Pedigree Animals Act, 1925.

The Secretary reported the receipt of a letter, dated 15th March, from the Ministry of Agriculture and Fisheries with regard to a proposed importation of two Romney Stud Rams from New Zealand. These Rams were from the Featherston Flock, whose Registered Flock Number was 21 in the New Zealand Romney Marsh Flock Book. In accordance with the terms of the above Act the Society was asked to give its views as to whether the Flock Book in which the animals were registered should be recognised.

As the matter was urgent, he had consulted Sir Joshua Ross-Taylor, and had also communicated with the Secretary of the Royal Agricultural Society. As a result of these inquiries, he had written to the Ministry, on behalf of the Directors, stating that they were of opinion that the Flock Book should be recognised under the provisions of the Importation of Pedigree Animals Act.

The Directors approved of the action taken.

Special Grants.

The following applications for Special Grants were considered :—

Eskdale and Liddesdale Agricultural and Pastoral Society.—It was agreed to give a Special Grant of £15 in respect of this Society's Centenary Show to be held in the current year.

Stewartry Agricultural Show.—An application for a Show Grant of £12 and Medals, for the Joint Show promoted by the St Mary's Isle Agricultural Society, the Dalbeattie Agricultural Society, and the Gatehouse District Agricultural Society, was submitted, and it was decided that the application be granted.

MEETING OF DIRECTORS, 3RD MAY 1939.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—*Ordinary Directors*—Mr J. W. Alexander; Mr John D. Allan; Mr David Blair; Mr William Brown; Mr James Clark; Mr John E. B. Cowper; Mr Peter W. Crawford; Lieut.-Colonel Garden Beauchamp Duff, D.S.O.; Mr William I. Elliot; Mr Alexander Forbes; Mr R. Wemyss Honeyman; Mr J. E. Kerr; Mr Finlay MacGillivray; Mr James M'Laren; Mr William Meiklem; Mr William Montgomery; Mr Robert Park; Captain Ian S. Robertson; Sir Joshua Ross-Taylor; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major Sir Samuel Strang Steel, Bt.; Mr T. G. Wilson; Mr James Wither. *Extraordinary Directors*—Major R. F. Brebner; Mr Thomas Clark; Mr John G. Dudgeon; Mr J. M. Dunlop; Mr George Grant; Mr James R. Lumsden; Mr Matthew Mather; Mr George G. Mercer; Mr Robert Miller; Mr Alexander Murdoch; Mr James Paton; Mr John Robertson; The Hon. Walter T. H. Scott, Master of Polwarth; Mr Thomas Templeton; Mr James Wyllie. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Consulting Zoologist*—Mr A. E. Cameron, M.A., D.Sc.

Illness of Chairman.

The Secretary read a letter from Mr James Durno, Chairman of Directors, expressing regret at being unable to attend the Meeting, and thanking the Directors for the kind wishes expressed at the Meeting on 5th April. He hoped to be present at the June Meeting.

Colonel F. J. Carruthers of Dormont, who, in the absence of Mr Durno, had been called to the Chair, expressed, on behalf of the Board, the sincere hope that Mr Durno would be sufficiently recovered to be able to attend the next Meeting.

T.R.H. The Duke and Duchess of Gloucester.

A letter was read from Major Ronald Stanyforth, Comptroller, conveying the thanks of the Duke and Duchess of Gloucester, and stating that it would give Their Royal Highnesses the greatest pleasure to become Honorary Members of the Society.

Edinburgh Show.

Poultry Judging Competition.—It was agreed to invite the three Agricultural Colleges in Scotland to nominate one Judge each for the Poultry Judging Competition, and, in addition, to appoint Miss A. Kinross, Ardselma, Aberfoyle, and Mr William Binnie, Garth House, Denny, to act as Judges.

Tomato and Egg Competitions.—A letter was submitted from the Department of Agriculture for Scotland, requesting permission to hold Tomato and Egg Competitions in an Annexe to their Pavilion at the Show, in conjunction with a display of Scottish National Mark Products.

It was decided that the request be granted.

Dentition of Pigs.—It was decided to appoint Professor Arthur Gofton, F.R.C.V.S., to carry out the Dentition Test for Pigs born in the year of the Show. The standard would be that adopted by the Royal Agricultural Society of England —viz., " Pigs having either one of their permanent incisors cut will be considered as exceeding this age." (Six months.)

It was further decided that, in the case of any animal disqualified under this Rule, a card should be attached to the pen, stating that the animal had been disqualified, and the reason therefor.

Physical Fitness Display.—The Secretary reported that he had been in touch with the Local Office of the National Fitness Council, and found that they would be prepared to arrange for displays to be given, as required, on the three days of the Show. These displays, which would last for twenty minutes on each occasion, would include such items as a Gymnastic Display by a picked team of sixteen men, and an International Basket Ball Game. There would be no cost to the Society, apart from the provision of a light meal for those taking part on each occasion.

It was decided to accept the offer, and it was agreed to leave it in the hands of Mr Alexander Murdoch and the Secretary to make the necessary arrangements.

Loading Bank for Hunters.—On an application from Mr G. H. J. Dove, Estate Office, Mellerstain, Gordon, it was decided to provide a loading bank for Hunting Horses at the Show.

Show of 1941.

Letters were submitted from the Town Clerk of Perth, conveying an invitation to the Society to hold the Show of 1941 at that centre.

The Secretary was instructed to thank the Town Council of Perth for the invitation, and to inform them that the Sites Committee would visit Perth at an early date.

Importation of Pedigree Animals Act, 1925.

The Secretary reported the receipt of a letter, dated 20th April, from the Ministry of Agriculture and Fisheries, with regard to a proposed importation of two Stud Lincoln Rams from New Zealand. One of these rams came from a flock registered in the Flock Book of the New Zealand Lincoln Sheep Breeders' Association, and the other from a flock registered in the New Zealand South Island Flock Book. In accordance with the terms of the above Act, the Society was asked to give its views as to whether the Flock Books in which the animals were registered should be recognised.

The Secretary reported that he had written to the Lincoln Longwool Sheep Breeders' Association, and he read the reply received, which stated that the Association had agreed to accept the rams for use in Registered Lincoln Flocks.

Under these circumstances, it was decided that the Secretary be instructed to inform the Ministry of Agriculture and Fisheries that the Directors were of opinion that the Flock Books should be recognised under the provisions of the Importation of Pedigree Animals Act.

National Diploma in Agriculture.

The Chairman submitted a Report on the Examination for the National Diploma in Agriculture held at Leeds in April.

Finance.

A Minute of Meeting of Committee, dated 3rd May, was submitted and approved. The Minute dealt with the following matters:—

Glasgow Veterinary College.—An application was considered from the Glasgow Veterinary College for a renewal of the grant of £100 for the current year, and it was recommended that the grant be renewed.

Animal Diseases Research Association.—It was decided to recommend that the grant of £200 to the Animal Diseases Research Association be renewed for the current year.

MEETING OF DIRECTORS, 7TH JUNE 1939.

Colonel F. J. CARRUTHERS of Dormont, Lockerbie, in the Chair.

Present.—*Ordinary Directors*—Mr R. Scott Aiton; Mr John D. Allan; Mr David Blair; Mr William Brown; Mr James Clark; Mr Peter W. Crawford; Lieut.-Colonel Garden B. Duff, D.S.O.; Mr Alexander Forbes; Mr R. Wemyss Honeyman; Mr J. E. Kerr; Mr Finlay MacGillivray; Mr James M'Laren; Mr William Meiklem; Mr A. W. Montgomerie; Mr William Montgomery; Mr Robert Park; Captain Ian S. Robertson; Sir Joshua Ross-Taylor; Mr T. Mercer Sharp; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Mr T. G. Wilson; Mr James Wither. *Extraordinary Directors*—Major R. F. Brebner; Mr Thomas Clark; Mr John G. Dudgeon; Mr J. M. Dunlop; Mr George Grant; Mr James R. Lumsden; Mr Matthew Mather; Mr George G. Mercer; Mr Robert Miller; Mr James Paton; Mr John W. Prentice; Mr John Robertson; Lord Rowallan; Mr Thomas Templeton; Mr James Wyllie. *Treasurer*—The Earl of Home, K.T. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—Mr J. F. Tocher, D.Sc., LL.D., F.I.C. *Consulting Zoologist*—Mr A. E. Cameron, M.A., D.Sc.

The late Mr John E. B. Cowper, Gogar House, Corstorphine.

Before proceeding with the business of the Meeting, the Chairman said it was with the deepest regret that he had to refer to the death of an esteemed colleague on that Board, Mr John E. B. Cowper, which occurred with tragic suddenness on 22nd May.

Mr Cowper, he said, joined the Society in 1902. During the past nine years he was a member of the Board and served on practically all the Standing Committees. He acted for several years as a Steward at the Annual Shows, and, during the current year, occupied the responsible position of Convener of the Shows Committee. In addition, he represented the Society on the Governing Body of the Royal (Dick) Veterinary College, and also at many Conferences and public Meetings.

As a recognised authority on the cultivation of Potatoes, he was widely consulted, but he was perhaps better known as a successful Breeder and Exhibitor of Large White Pigs. His herd of Large Whites at Gogar Mains had a world-wide reputation, and Mr Cowper's services as a Judge were in constant demand.

In all these activities Mr Cowper earned and retained the esteem and regard of all with whom he came in contact. His strict integrity, his kindliness of disposition, and his unfailing sense of friendship made him beloved by all his associates. No one had the interests of the Society more truly at heart, and, in the many spheres of its activities, he rendered notable service. His death was a loss to the Society which they most deeply deplored.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy thereof to the widow of the deceased.

Illness of Chairman.

Colonel F. J. Carruthers of Dormont, who had been called to the Chair on the motion of Sir Joshua Ross-Taylor, expressed the regret of the Board that the Chairman of Directors, Mr Durno, was still unable to be present and to preside at their Meeting. In his latest letter to the Secretary, dated 3rd June, he said he was very sorry he would be unable to attend that Meeting. He greatly appreciated the kind wishes of the Directors, and expressed the hope that he would be able to be present at the Show. Colonel Carruthers added that they could only repeat their good wishes for Mr Durno's speedy recovery.

Letters.

The following letter was submitted :—

Licensing of Bulls.—From the Incorporated Society of Auctioneers, 34 Queen's Gate, London, expressing dissatisfaction with regard to the operation of the Licensing of Bulls Act. Breeders of Milk Recorded Herds of Dual Purpose Breeds were, they said, having difficulty in getting bulls passed by the Ministry's Inspectors, because these Inspectors appeared to look for a beef type of bull, and little notice was taken of the Milk Records of the Dam of the Bull presented.

The Chairman said no complaint of this nature had come from Scotland, and he thought it must refer entirely to England.

It was decided to take no action in the matter.

Edinburgh Show, 1939.

Poultry Judging Competition.—The Secretary reported that the three Agricultural Colleges had, as requested by the Directors, nominated the following to act as Judges along with those already appointed by the Society : *Edinburgh*—Mrs Elizabeth Borland, Flemington, West Linton ; *West of Scotland*—Miss Margaret S. Miller, Poultry School, Auchincruive : *North of Scotland*—Miss Bessie Findlay, County Instructress, Central Aberdeenshire. These nominations were approved.

Showyard Arrangements.—The following were appointed a small Committee to meet with the Secretary and Master of Works, before the Show, in order to deal with any points arising in connection with the Showyard : Sir Joshua Ross-Taylor, Mr Alexander Murdoch, Major R. F. Brebner, Mr J. E. Kerr, and Major R. W. Sharpe.

Judge of Hacks.—The Secretary reported that the Judge of Hacks, Major Misa, had wired that he was unable to act on account of being recalled to his Regiment. The next Reserve, Captain The Hon. Arthur Baillie, Fenny Compton Wharf, Leamington Spa, had been communicated with, and he had kindly agreed to act as Judge.

Dentition of Pigs.—The Secretary reported that, in consultation with Professor Gofton, he had adjusted a Form of Certificate of Disqualification to be signed in duplicate by the Veterinary Inspector carrying out the Dentition Test, and also a form of Card which should be attached to the pen of any animal disqualified under the Test. These forms, which were on similar lines to those in use at the Royal Show, were approved.

Vacancies in List of Stewards, &c.—The following were appointed to fill vacancies caused by the death of Mr John E. B. Cowper : *Steward of Catering, Bees, Honey, &c.*—Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh ; *Judge of New Implements*—Mr William Montgomery, North Milton, Kirkcudbright ; *Member of Horse-Shoeing Committee*—Mr J. M. Dunlop, Buteland, Balerno.

Hospitality Committee.—Mr James Durno, Chairman of Directors, Mr Alexander Murdoch, Major R. F. Brebner, and Mr William C. Hunter, were appointed a Hospitality Committee to meet Overseas Visitors, and extend to them such assistance and hospitality as might be found practicable.

Show of 1941.

A Report of the Sites Committee was submitted, and, on the motion of Sir Joshua Ross-Taylor, was unanimously adopted.

The Report stated that the Sites Committee had visited Perth and Dundee on Wednesday, 17th May.

At Perth the Committee were received at the City Chambers by the Lord Provost and Town Officials. The site offered was the South Inch, the same as that offered eight years ago. The extent of the main portion of the South Inch was only about 35 acres. There was, however, an area of about 12 acres adjoining, but on the opposite or East side of the Edinburgh Road. To make this ground available, at least one substantial bridge would require to be erected over the roadway. In addition to the site, the Town Council offered to provide water, gas, and electricity services.

At Dundee the Committee were received at the City Chambers by the Lord Provost and Town Officials, and thereafter proceeded to inspect the ground at Station Park, the site of the former Show in 1933. The surface of this ground was now much improved, being covered with a good turf, and, by the date of the Show, an additional 10 acres would be available, making an area of about 53 acres in all. In addition to the site, the Town Council of Dundee were prepared to give the same services of water, gas, and electricity as on the former occasion, and would also place at the disposal of the Society ample space for the parking of cars on the opposite side of the road.

The Committee had no hesitation in recommending that the site offered by the Corporation of Dundee at Station Park be accepted.

Animal Diseases Research Association.

On the motion of the Earl of Home, K.T., Treasurer, it was unanimously agreed to confirm the proposed grant of £200 for the current year to the Animal Diseases Research Association.

Glasgow Veterinary College.

On the motion of the Earl of Home, K.T., it was unanimously agreed to confirm the proposed grant of £100 for the current year to the Glasgow Veterinary College.

"Dry Stane Dyking."

Letters were submitted from Colonel F. Rainsford-Hannay, Cardoness, Gatehouse-of-Fleet, making application for a grant of money or medals in connection with a proposed Competition in "Dry Stane Dyking" in the Stewartry of Kirkcudbright.

After discussion, it was decided that the Society should encourage the proposed Competition by giving Medals, the number of those to be left for decision to a small Committee consisting of Colonel F. J. Carruthers and Sir Joshua Ross-Taylor. The view was expressed that it would be desirable that one Medal should be offered for Junior Competitors, say, not exceeding 21 years of age.

The small Committee above mentioned subsequently decided, on a request from Colonel Rainsford-Hannay, to grant two Medals for each of the two Classes provided—viz.: Class "A" Open, and Class "B" confined to Farm and Estate Workers and Shepherds, the Competitors in both Classes working in pairs.

Licensing of Boars.

A letter was submitted from the Ministry of Agriculture and Fisheries, dated 19th May, forwarding a Note of the Conference held on 27th March with regard to the question of the Licensing of Boars, and inviting the considered views of the Society regarding the desirability, or otherwise, of introducing a Scheme for the Licensing of Boars in Great Britain.

After discussion, it was decided that a reply be sent to the effect that the Society considered such a Scheme to be desirable.

Merchandise Marks Act, 1926.

A letter was submitted from the Department of Agriculture for Scotland, inviting observations regarding a proposal that it be made compulsory for the name of the Country of Origin of Imported Goods to be clearly indicated, without the present option of marking the goods "Foreign" or "Empire."

After some discussion, it was unanimously agreed to inform the Department that the Directors were of opinion that the Act should be amended as proposed.

Rothamsted Experimental Station.

A letter was submitted from the Secretary of the Rothamsted Experimental Station, intimating that the Annual Gathering at Rothamsted had been fixed for Wednesday, 28th June, and inviting any Directors or Officials of the Society who might be interested to attend the Meeting.

It was decided to inform the Secretary of Rothamsted Experimental Station that Dr J. F. Tocher, Consulting Chemist, and Dr A. E. Cameron, Consulting Zoologist, would be glad to receive invitations to the Annual Gathering.

Science.

A Minute of Meeting of Science Committee, dated 7th June, was submitted and approved.

The Minute stated that a Meeting had been held, along with representatives of the trade, to consider the prices of feeding-stuffs as at that date. A schedule of these prices was adjusted, and it was proposed that it be printed and issued as formerly.

Finance.

A Minute of Meeting of Committee, dated 7th June, was submitted and approved.

The Minute recommended that a Grant of £50 be again given to the Edinburgh Highland Reel and Strathspey Society for the current year.

MEETING OF DIRECTORS HELD IN THE SHOWYARD, EDINBURGH, 21st JUNE 1939.

Mr James Durno, Crichie, Inverurie, in the Chair.

Present.—Ordinary Directors—Mr R. Scott Aiton; Mr J. W. Alexander; Mr David Blair; Mr William Brown; Mr Ian M. Campbell; Mr James Clark; Mr Peter W. Crawford; Lieut.-Colonel Garden B. Duff, D.S.O.; Mr James Durno; Mr William I. Elliot; Mr Alexander Forbes; Mr R. Wemyss Honeyman; Mr J. E. Kerr; Mr Finlay MacGillivray; Mr James M'Laren; Mr William Meiklem; Mr A. W. Montgomerie; Mr William Montgomery; Mr Robert Park; Captain Ian S. Robertson; Sir Joshua Ross-Taylor; Mr T. Mercer Sharp; Major Robert W. Sharpe; Mr G. Bertram Shields; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Major Sir Samuel Strang Steel, Bt.; Mr T. G. Wilson; Mr James Wither. *Extraordinary Directors*—Mr William Allison; Major R. F. Brebner; Mr Thomas Clark; Mr John G. Dudgeon; Mr J. M. Dunlop; Mr George Grant; Mr John Kerr; Mr James R. Lumsden; Mr Matthew Mather; Mr Alexander Murdoch; Mr James Paton; Mr John W. Prentice; Mr John Robertson; Mr Thomas Templeton; Mr James Wyllie. *Treasurer*—The Earl of Home, K.T. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Auditor*—Mr George James Gregor, C.A.

Before proceeding with the business of the Meeting, the Chairman, Mr James Durno, expressed regret that, owing to his recent illness, he had been prevented from attending meetings of the Board, and from taking such an active part in the preparations for the Show as he would have desired. He thanked the Directors for their kindly messages of sympathy and good wishes for his recovery, which had been duly communicated to him by the Secretary.

Protests.

The Secretary reported that no Protests had been lodged.

Precepts.

. The Chairman was authorised to sign the Precepts for the prizes awarded at the Edinburgh Show.

Authority was given to draw upon the Society's Ordinary Funds to meet any deficit on the Show Account, and also, if necessary, to obtain an Overdraft from the Bank of a sum not exceeding £2000.

Showyard.

Sir Joshua Ross-Taylor moved that a Special Committee be appointed to consider questions arising from the incomplete state of the Showyard at the date of the opening of the Show, and also the arrangements in connection with the Forage Contract for the Show.

The Motion was seconded by Mr George Grant, and agreed to.

The Special Committee was then appointed, comprising the Chairman, Treasurer, Honorary Secretary, and the Principal Stewards.

The same Committee was also given powers to make such arrangements as they might consider desirable for the Timber Contract for the Show of 1940.

MEETING OF DIRECTORS, 1st NOVEMBER 1939.

Colonel F. J. Carruthers of Dormont, Lockerbie, and afterwards Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, in the Chair.

Present.—Ordinary Directors—Mr R. Scott Aiton; Mr J. W. Alexander; Mr John D. Allan; Mr William Brown; Mr Alexander Clark; Mr James Clark; Mr William I. Elliot; Mr R. Wemyss Honeyman; Mr James Hope; Mr J. E. Kerr; Mr James Kilpatrick; Mr Finlay MacGillivray; Mr James M'Laren; Mr Thomas M'Lay; Mr William Montgomery; Mr Robert Park; Sir Joshua Ross-Taylor; The Hon. Walter T. H. Scott, Master of Polwarth; Mr T. G. Wilson. *Extraordinary Directors*—Major R. F. Brebner; Mr James R. Lumsden; Provost Hugh Mackenzie; Mr Alexander Murdoch; Major Robert W. Sharpe; Mr John P. Sleigh; Mr A. A. Hagart Speirs; Mr Thomas Templeton; Mr James Wither. *Treasurer*—The Earl of Home, K.T. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—Mr J. F. Tocher, D.Sc., LL.D., F.I.C.

Illness of Chairman.

In the unavoidable absence through illness of Mr James Durno, Chairman of Directors, Colonel F. J. Carruthers of Dormont was unanimously called to the Chair.

Chairman of the Board for 1939-40.

Colonel Carruthers said the next business was the appointment of a Chairman of the Board of Directors. He knew it was with great regret that they would learn that Mr James Durno did not seek re-election on account of the state of his health. It was the usual practice of the Board to reappoint the Chairman for a second year of office, and they should have been only too glad to reappoint Mr Durno if he had been able to act. In the circumstances, however, he was afraid they had no alternative but to elect another Chairman.

Mr Durno, he said, had requested the Secretary to convey to the Meeting his great appreciation of the loyal support which they had given him during his period of office, and also the consideration they had shown him during his illness. He was sure he was expressing the views of all of them when he said that they hoped Mr Durno would be speedily restored to full health and strength. At the same time, they thanked Mr Durno most cordially for his services during the past year.

Colonel Carruthers then moved that Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, be elected Chairman of the Board for the ensuing year, and this was unanimously agreed to.

Major Brebner, on taking the Chair, thanked the Directors for the honour they had done him. He wished to homologate what Colonel Carruthers had said about Mr Durno, who had been an ideal Chairman of Directors. It was particularly disappointing that Mr Durno had to give up office owing to the state of his health, and he would like to join in wishing him a very speedy recovery.

Vacancy on Board.

It was remitted to the Ordinary Directors in the Edinburgh Show Division to bring forward the name of a Director to fill the vacancy caused by the death of the late Mr John E. B. Cowper.

Letters.

The following letters were submitted :—

Mrs J. E. B. Cowper, Gogar House, Edinburgh.—Thanking the Directors for letter of sympathy, and wreath, on the occasion of the death of her husband, the late Mr John E. B. Cowper.

Edinburgh Highland Reel and Strathspey Society.—Expressing thanks for renewal of Grant of £50 for the current year.

Edinburgh Show, 1939.

Accounts.—The Secretary reported that a Summary of the Accounts of the Edinburgh Show had that day been submitted to the Finance Committee. These Accounts showed a probable credit balance of about £4852. This was slightly in excess of the previous highest profit of £4813 at the Dundee Show in 1933. The total attendance at Edinburgh, of those who paid for admission, also constituted a record, being 97,272, as compared with 96,340 at the Dundee Show.

In reply to a letter of thanks which the Secretary had written to the Corporation of Edinburgh, and in which he reported the record attendance at the Show, the following reply had been received from the Town Clerk, dated 4th July 1939 :—

> " I duly received your letter of 26th ult., which I read to the Town Council at their recent meeting, when it was received by the members with much appreciation. They share the gratification of your Directors on the success of this year's Show, and I am to assure your Directors that it is a special pleasure for the Town Council at all times to be associated with them in the important work which they carry on so successfully."

List of Awards.—A List of Awards at Edinburgh Show was laid on the table.

Colouring of Sheep.—Sir Joshua Ross-Taylor, Mungoswalls, Duns, Chairman of the Joint Committee appointed by the Border Leicester Sheep Society and this Society, reported on the inspection by the Committee of the Sheep exhibits at the Show. They had, he said, an excellent entry of Border Leicester Sheep at the Show, and he would like Breeders to know that the Joint Committee appreciated very much the way they had tried to carry out the somewhat difficult rule. There were two cases of exhibits which were slightly over-coloured, but he was glad to say that, when this was pointed out to the Border Leicester Society's representatives on the Joint Committee, they at once agreed to bring the matter in a friendly way to the notice of these Exhibitors. He thought that after this there would not be any further trouble about colouring.

Inverness Show.

The Chairman submitted the following Motion, which appeared on the Agenda of the Meeting :—

> " That the arrangements for the Annual Show, to be held at Inverness in 1940, be not proceeded with."

He said it was with very deep regret that he had to move the Motion, but he thought they would all agree that it was impossible for them to proceed, under present circumstances, with the arrangements for the 1940 Show. There was no other course open to them.

The Motion was unanimously agreed to.

Future Shows.

The Chairman then moved the following Motion :—

> " That the next Show of the Society be held at Inverness, and the following Show at Dundee, in accordance with the order already agreed upon."

This Motion was also unanimously adopted.

"Dry Stane Dyking."

A letter was submitted from Colonel F. Rainsford-Hannay, Cardoness, Gatehouse-of-Fleet, containing a Report on the Dry Stane Dyking Competition held in the Stewartry of Kirkcudbright on 3rd October, and expressing the thanks of the Committee for the Medals offered by the Society. One Medal was returned, due to the fact that in Class B. the winner worked alone and not as one of a pair.

Classification of Seed Potatoes.

A letter was read from the Department of Agriculture for Scotland to the effect that in view of the present situation it had been decided, in consultation with the Ministry of Agriculture and Fisheries, to defer consideration of altering the Seeds (Scotland) (Amendment) Regulations, 1936, as affecting Seed Potatoes.

Ministry of Food.

A Memorandum prepared by the National Farmers' Union and Chamber of Agriculture of Scotland, dated 13th October, dealing with Schemes affecting Agriculture which were being brought into operation by the Ministry of Food, was submitted.

It was decided to remit the Memorandum to the following Special Committee to take such action thereon as they might consider desirable : Mr J. W. Alexander, Mr William I. Elliot, Mr James Hope, Mr Finlay MacGillivray, Mr James M'Laren, Mr James Paton, Sir Joshua Ross-Taylor, Mr Thomas Templeton, Mr James Wither, with the Chairman, Treasurer, and Honorary Secretary, *ex officiis.*

Sheep Industry.

A letter was submitted from the Scottish Land and Property Federation, dated 19th October, with regard to the critical position of the Sheep Industry.

It was decided that this letter be also remitted to the Committee abovementioned.

Proctor's "Tripod" Harvesting System.

A letter was read from Mr John R. Dale, Auldhame, North Berwick, with regard to Proctor's "Tripod" Harvesting System, which was given an award of £100 by the Society in 1934. In the Judges' Report at that time it was stated that "the general use of this (Proctor's) System would result in a large financial gain to the Country."

Along with the letter Mr Dale sent samples of hay which had been harvested by Proctor's System, and, for comparison, samples of hay secured in the ordinary way. He thought this System, if generally adopted, would do more to keep Scottish Farming going than anything that had been brought forward for a long time. He suggested that the Society do something to help Mr Proctor to carry on his good work and bring his System into general use.

After discussion, it was moved by the Master of Polwarth, and seconded by Mr James Hope, that a small Committee be appointed to meet Mr Dale and discuss the matter.

Mr Scott Aiton moved, and Mr J. W. Alexander seconded, that no action be taken on the lines proposed in the meantime.

On a vote being taken, 12 voted for the Amendment and 12 for the Motion. The Chairman gave his casting vote for the Amendment. The decision of the Meeting was accordingly that no action be taken in the meantime.

National Diploma in Dairying.

Colonel F. J. Carruthers of Dormont, Convener of the Education Committee, submitted the following Report on the Examination for the National Diploma in Dairying held at Reading and Auchincruive in September :—

"The Forty-fourth Annual Examination for the National Diploma in Dairying took place during September at the Dairy School for Scotland, Auchincruive, Ayr, for Scottish students, and at the University and British Dairy Institute, Reading, for English and Welsh students.

"At the Auchincruive centre 61 candidates presented themselves—49 candidates for all subjects, 11 for re-examination in certain subjects in which they had previously failed, and 1 for Part II. of the Examination. 43 candidates obtained the Diploma.

"At the Reading centre 89 candidates presented themselves—75 candidates for all subjects, 11 for re-examination in certain subjects, 2 for Part II. and 1 for Part I. of the Examination. 59 candidates obtained the Diploma.

"The names of the successful candidates will be published in the next volume of 'Transactions.'

"Of those candidates who failed, 8 at Auchincruive and 22 at Reading failed in not more than three subjects, and these will be permitted to reappear for the subjects in which they failed at the next Examination."

Education.

A Minute of Meeting of Education Committee, dated 1st November, was submitted and approved.

The Minute dealt with the following matters:—

Proposed Certificate in Dairy Factory Management.—Letters had been received from the Secretary of the Joint Examination Board with reference to the proposed Certificate in Dairy Factory Management, for which a Syllabus had been drawn up by the Joint Board. The letters inquired as to whether this Society was prepared to concur in the institution of such a Certificate.

It was decided to recommend, in view of the present state of War, that consideration of this matter be deferred in the meantime.

N.D.A. and N.D.D. Examinations.—With regard to the continuance of the Examinations for the National Diploma in Agriculture and the National Diploma in Dairying during the War, it was decided to recommend that these Examinations should continue to be held so long as it was found possible to conduct them.

Finance.

A Minute of Meeting of Committee, dated 1st November, was submitted and approved.

The Minute dealt with the following matter:—

Empire Exhibition Guarantee Fund.—It was reported that, on 13th September, a provisional call of 4s. in the £ had been made in respect of the Society's Guarantee of £1000 towards the Empire Exhibition Guarantee Fund, and the sum called for, £200, had been remitted to the Union Bank of Scotland on 29th September.

Showyard Erector, &c.

A Minute of Meeting of Special Showyard Committee, dated 25th July, was submitted and approved.

The Minute stated that Mr John Reid had intimated his resignation of the post of Showyard Erector, and the Committee recommended that Mr Frank Reid be appointed Showyard Erector, for a period of one year, at a salary of £300 per annum.

This appointment would be on the understanding that Mr Frank Reid should carry out the work of erecting the Showyard under the direction of the Society's Master of Works, who should have full authority to determine the order in which the various works should be executed, the manner of their execution, and the time of their commencement and completion.

The Special Committee had also considered the question of the Forage Contract, but, on having figures submitted to them for several years past, agreed that the present arrangement should continue in the meantime.

MEETING OF DIRECTORS, 29TH NOVEMBER 1939.

Major R. F. **Brebner**, The Leuchold, Dalmeny House, Edinburgh, in the Chair.

Present.—Ordinary Directors—Mr R. Scott Aiton; Mr John D. Allan; Mr David Blair; Mr William Brown; Mr Alexander Clark; Mr Peter W. Crawford;

Lieut.-Colonel Garden B. Duff, D.S.O.; Mr William I. Elliot; Mr Peter Gordon; Mr George Grant; Mr R. Wemyss Honeyman; Mr James Hope; Mr James Kilpatrick; Mr James M'Laren; Mr Thomas M'Lay; Mr A. W. Montgomerie; Mr Robert Park; Sir Joshua Ross-Taylor; Major Sir Samuel Strang Steel, Bt. *Extraordinary Directors*—Major R. F. Brebner; Mr J. MacKessack Leitch; Mr James R. Lumsden; Mr Alexander Murdoch; Mr James Paton; Major Robert W. Sharpe; Mr A. A. Hagart Speirs; Mr Thomas Templeton. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont.

The late Mr James Wilson, Westburn.

Before proceeding with the business of the Meeting the Chairman referred with deep regret to the death, in September, of a former member of the Board—Mr James Wilson, Westburn, Cambuslang.

Mr Wilson, he said, was widely known and highly esteemed throughout the West of Scotland for his sound judgment and practical knowledge of Agriculture. He earned a well deserved reputation as an arable farmer, who conducted his extensive farming operations with marked success and on eminently practical lines.

He was a Member of the Society for over fifty years, and served as an Ordinary Director for a term of four years from 1911 to 1914. During his period of office he took a keen interest in the affairs of the Society, and his death was a loss to the Society and to Agriculture which they deeply deplored.

It was worthy of note that it was through an application by Mr Wilson for a Medal for long service on behalf of an employee at Westburn, that the Society in 1913 first proceeded to consider a permanent scheme for those awards. The name of Mr John Thom, Clydesmill, Cambuslang, the employee in question, was accordingly the first of the long list of over 2500 farm-workers who had received these awards since that date.

A Minute of regret and sympathy was submitted and adopted, the Members present upstanding, and the Secretary was instructed to forward a copy to the relatives of the deceased.

Vacancy on Board.

On behalf of the Ordinary Directors in the Edinburgh Show Division, Mr William I. Elliot, Middletoun, Stow, moved that Mr John Kerr, Yorkston, Gorebridge, be nominated at the General Meeting in January as an Ordinary Director to fill the vacancy caused by the death of Mr John E. B. Cowper, Gogar House, Corstorphine. This was unanimously agreed to.

Government Schemes of Control.

Minutes of Meetings, dated 10th and 18th November, of the Special Committee appointed at the last Meeting of Directors, were submitted.

The Minutes stated that, in accordance with the remit from the Board, the Committee had taken into consideration the Memorandum submitted by the National Farmer's Union and Chamber of Agriculture of Scotland, dated 13th October 1939, and also the letter from the Scottish Land and Property Federation, dated 19th October 1939.

After full consideration the Draft of a Memorandum was prepared and circulated to the Members of the Committee for further consideration at a second Meeting. At that Meeting the Draft Memorandum was again carefully considered, and, after discussion of its various details, was finally adjusted.

The Memorandum was in the following terms:—

Memorandum.

The Special Committee appointed by the Directors of the Highland and Agricultural Society on 1st November have had under consideration the Memorandum prepared by the National Farmers' Union and Chamber of Agriculture of Scotland, dated 13th October 1939, and also a letter from the Scottish Land and Property Federation, dated 19th October 1939.

The Committee agree in principle with the terms of the Memorandum prepared by the National Farmers' Union and Chamber of Agriculture. They, however, desire to make special reference to the following matters :—

MINISTRY OF FOOD.

It is desired to support the view expressed by the Union and Chamber that Producers in Scotland should be represented on the Ministry of Food by the appointment of a representative, or representatives, thoroughly versed in Practical Agriculture in Scotland, who would give guidance in the formulation and administration of Schemes of Control.

LIVE STOCK.

The Committee are strongly of opinion that a Long-Term Scheme of Control should be put into operation forthwith.

(*a*) *Cattle*.—The Schedule of Prices recently issued by the Minister of Food is considered to be unworkable, as no one can grade Cattle to within 1 per cent of the live-weight. The prices proposed are unsatisfactory, in view of present costs.

The Committee recommend that there be two standard grades, in accordance with the scheme in operation before the war, and that a super-grade be introduced for Home-Bred Fat Cattle killing out at a high percentage of the live-weight, of which there are very large numbers in Scotland. The grades, therefore, would be as follows :—

Grade.	Killing Out Percentage.	Price per Live-weight Cwt.
Super Grade.	60 per cent or over.	60s.
A.	57 per cent or over.	57s. 6d.
B.	54 per cent or over.	54s.

There should be a corresponding decrease for lower-grade Cattle. In all cases, the seller should have the option of having his cattle slaughtered and graded on a dead-weight basis.

The seller should be paid on the full ascertained live-weight at the certifying centre without any deduction. The prices fixed should be reviewed from time to time, having regard to the rising costs of production.

(*b*) *Sheep*.—In view of present costs, the Committee are of opinion that the prices suggested by the Union and Chamber are not now adequate. The scale of prices announced by the Ministry of Food is also considered unsatisfactory.

(1) *Fat Sheep*.—The Committee consider that the minimum fixed price for Fat Sheep, all the year round, should be 1s. per lb., dressed carcase weight, this price being subject to revision from time to time.

(2) *Lambs*.—The price should be as follows : an addition of 2½d. per lb. above the prescribed Sheep price for any month, for lambs sold up to 31st December in the year of birth. In the calendar year following birth, until the date of shearing, the addition should be 3d. per lb.

(3) *Sucking Lambs*.—The proposal of the Ministry of Food in regard to sucking lambs does not meet Scottish conditions. The date should be extended to 30th June, and the price should be not less than 6d. per lb. above the standard Sheep price.

(4) *Ewes*.—Ewes of 70 lb., or under, should be 3d. per lb. under the standard Sheep price, rising or falling according to the rise or fall of the standard price. Ewes over 70 lb. to be 5d. below the standard Sheep price, and to rise and fall in the same manner.

(5) *Rams*.—Young Tup Lambs, up to date of shearing, to be the same price as the standard Sheep price.

Buyers of Store Sheep require to have some assurance with regard to price under the Long-Term Policy, otherwise there is little prospect of Breeders obtaining a remunerative price for lambs next season.

WOOL.

The Committee agree with the Union and Chamber that the temporary measures of Wool control have virtually brought trading in this commodity to a standstill, and the inability of Farmers to dispose of their product has caused considerable financial embarrassment. They urge that there should be an early decision in this matter, so that Farmers may be enabled to dispose of their Wool stocks at economic prices.

The Committee would point out that the whole Sheep-Breeding Industry, particularly in the case of Hill Sheep, is in a precarious condition, and unless

Breeders are enabled immediately to sell this year's Clip of Wool at satisfactory prices, the position will become untenable. This state of affairs is intensified by the fact that this year's crop of Lambs and Ewes has already been disposed of at unremunerative prices, due to the unsettled condition of National affairs, the Government's Plough Policy, and the extremely low prices for Mutton which the Government indicated might be fixed, particularly for the light class of Ewes.

In considering prices, the Committee would point out that the prices obtaining before control, for the 1938 and 1939 Clips, were altogether uneconomic, and, in fixing prices, the figures for these Clips should not form a basis.

The Committee are strongly of opinion that the prices fixed for Scottish Wools at present unsold should be not less than the following :—

Blackface	1s. per lb.
Cheviot—Ewe and Hogg (washed)	1s. 6½d. per lb.
Do. do. (unwashed) . . .	1s. 4d. per lb.
Half-Bred—Ewe and Hogg (washed) . . .	1s. 6½d. per lb.
Do. do. (unwashed) . . .	1s. 4d. per lb.
Down Breeds and Down Crosses (washed) . .	1s. 6½d. per lb.
Do. do. (unwashed) . .	1s. 4d. per lb.
Border Leicesters and Leicester—Blackface Crosses .	1s. 2d. per lb.

The above prices should be net.

POTATOES.

The Committee desire to urge that it is essential the Government take over the 1939 crop at the present maximum prices, and that the Seed Potato prices, which it is understood are to be issued, should be minimum prices per ton. These prices should be disclosed forthwith. If this is not done immediately, it is believed the delay will have a detrimental effect on the increased production desired by the Government in 1940. In urging the fixing of minimum prices, the Committee have in mind past experience of this and other commodities having been bought from the Producers at much below maximum prices, and retailed at full prices to the public.

It is further urged that the Government intimate now that the 1940 crop will be taken over at prices in keeping with the costs of production.

The Committee would also urge that Producers be given equal representation with Merchants on the Price Fixing Committee of the Ministry of Food. The representatives of Producers on that Committee should in no case be Merchant-Growers.

PLOUGH POLICY.

The Committee support the representation of the Union and Chamber that Producers cannot participate whole-heartedly in the Government's plan for bringing 260,000 more acres of land in Scotland into a state of fertility unless and until definite assurance is given that the Government will undertake to purchase the produce of the extra cultivation, and that the prices paid will be such as to make production on the secondary and poorer soils an economic proposition. An immediate statement on this subject is urgently called for.

RURAL HOUSING.

The Committee also support the representation of the Union and Chamber that special measures be taken by the Government to enable Contractors to complete work on Farm Cottages which were in course of erection at the outbreak of hostilities, the work having been held up on account of the inability to secure the necessary materials. This would apply also to the erection of houses for which Schedules have been passed. This is important, in view of the need for improvement in Rural Housing, and the difficulty often experienced in finding suitable accommodation for workers.

FARM LABOUR.

In view of the considerably increased Area under cultivation in 1940, the Committee are satisfied that the present scarcity of skilled farm labour will be greatly intensified, and they are strongly of opinion that no Farm-workers at present on the land should be taken for Military Service.

8 EGLINTON CRESCENT,
EDINBURGH, 18*th November* 1939.

It was decided that copies of the Memorandum be forwarded to the Secretary of State for Scotland, the Secretary of the Department of Agriculture for Scotland, the General Secretary of the National Farmers' Union and Chamber of Agriculture of Scotland, and the Secretary of the Scottish Land and Property Federation.

In forwarding the Memorandum to the Secretary of State for Scotland, it was decided to state that, if the Secretary desired to receive a deputation on the subject, such a deputation would be ready to attend at such time and place as he might be pleased to arrange.

The Chairman explained that the Committee had thought it desirable that the Memorandum should be published in the Press, and this had been done.

Considerable discussion took place regarding the last paragraph of the Memorandum.

Mr James Hope, Eastbarns, Dunbar, moved the approval of the Memorandum.

Mr Alexander Clark, Strathore House, Thornton, seconded.

Major R. W. Sharpe of The Park, Earlston, moved as an Amendment that the following words be added to the paragraph in the Memorandum dealing with the question of Farm Labour: "until the Ministry of Labour can arrange for their places to be taken by older men, or by men returned from other industries."

This was seconded by Colonel F. J. Carruthers of Dormont.

Mr Peter Gordon, Balcraig Moor, Port William, moved a further Amendment that for the words, "that no farm-workers at present on the land should be taken for Military Service," there be substituted the words, "that no key workers at present on the land should be taken for Military Service without the permission of the Agricultural Executive Committees."

Mr W. I. Elliot, Middletoun, Stow, seconded.

On the Amendments being put to the Meeting, 7 voted for the Amendment by Major Sharpe, and 6 voted for the Amendment by Mr Peter Gordon.

On Major Sharpe's Amendment and the Motion by Mr James Hope being put to the Meeting, 8 voted for Major Sharpe's Amendment, and 13 for the Motion.

The Motion, therefore, that the Memorandum as prepared by the Spcial Committee be approved, was carried.

The Minutes and Proceedings of the Special Committee were also approved.

At the suggestion of Mr Alexander Murdoch it was decided to send a copy of the Memorandum to the Minister of Food.

It was agreed that the Special Committee should continue to deal with any matters covered by the Memorandum which might arise. Mr Peter Gordon, Balcraig, Port William, was appointed to the Committee in place of Mr Finlay MacGillivray of Aldie, Tain, who had expressed his desire to resign from the Committee.

Finance.

A Minute of Meeting of Committee, dated 29th November, was submitted and approved.

The Minute recommended that the grant of £100 to the Scottish Agricultural Organisation Society be renewed for the year 1940.

Control of Wool.

Members of the Board who had recently attended a Meeting at Carlisle with the Wool Controller expressed their strong dissatisfaction with the prices which the Controller indicated were to be paid for the Wool still unsold.

The Directors considered that, in fixing the price of Wool, the cost of production must form the basis, together with interest on the money which had been outstanding for some months owing to the introduction of Wool Control.

The Directors decided to emphasise that the prices stated in the Memorandum by their Special Committee, dated 18th November, were the minimum prices which afforded a reasonable return to the farmer.

It was decided to request the Minister of Supply to receive a deputation in support of the Committee's recommendations.

MEETING OF DIRECTORS, 3RD JANUARY 1940.

Major R. F. **Brebner**, The Leuchold, Dalmeny House, Edinburgh, in the Chair.

Present.—Ordinary Directors—Mr R. Scott Aiton; Mr J. W. Alexander; Mr John D. Allan; Mr William Brown; Mr James Clark; Mr Peter W. Crawford; Mr William I. Elliot; Mr George Grant; Mr R. Wemyss Honeyman; Mr J. E. Kerr; Mr James Kilpatrick; Mr Finlay MacGillivray; Mr James M'Laren; Mr Thomas M'Lay; Mr A. W. Montgomerie; Mr William Montgomery; Mr Robert Park; Sir Joshua Ross-Taylor; The Hon. Walter T. H. Scott, Master of Polwarth; Major Sir Samuel Strang Steel, Bt.; Mr T. G. Wilson. *Extraordinary Directors*—Major R. F. Brebner; Mr James R. Lumsden; Mr Alexander Murdoch; Mr James Paton; Mr T. Mercer Sharp; Mr John P. Sleigh; Mr Thomas Templeton; Mr James Wither. *Honorary Secretary*—Colonel F. J. Carruthers of Dormont. *Chemist*—Mr J. F. Tocher, D.Sc., LL.D., F.I.C. *Auditor*—Mr George James Gregor, C.A.

Letter.

The following letter was submitted:—

The Countess of Elgin.—Expressing thanks, as Chairman of the Guild of Housewives, S.W.R.I., for the grant of prize-money for the Utility Gardens Competition.

Finance.

A Minute of Meeting of Finance Committee, dated 3rd January, was read and approved.

The Minute stated that the Accounts for the year 1938-39, as prepared by the Society's Auditor, had been submitted and approved, and signed by two members of the Finance Committee and by the Auditor.

Proposal for Emergency Committee.

The Chairman explained that it had been thought desirable to consult the Society's Law Agents with regard to the proposal for the appointment of an Emergency Committee to carry on the work of the Board during the duration of the War, and a letter from Messrs Tods, Murray & Jamieson, W.S., was submitted.

The letter pointed out that there was no provision in the Bye-laws for the appointment of such a Committee, and that, according to these Bye-laws, the Board of Directors should meet on the first Wednesday of each month from November to June inclusive. To pass a new Bye-law entailed its submission to two Meetings of the Board of Directors and to two Meetings of Members, which meant that no new Bye-law could be passed sooner than January 1941. As the quorum necessary for a Meeting of Directors was only seven, it was suggested that it would be better to call the monthly Meetings of Directors, it being clearly understood that it was not expected that members of the Board from a distance should regard it as being necessary to attend.

The Finance Committee had considered this letter, and reported that they were in agreement with the views expressed by the Society's Law Agents.

It was accordingly decided to take no action in the direction of appointing an Emergency Committee.

Government Schemes of Control.

The Secretary reported briefly on the proceedings, since last Meeting, of the Special Committee appointed to deal with Government Schemes of Control. A deputation from the Committee, consisting of Major R. F. Brebner, Sir Joshua Ross-Taylor, Mr T. G. Wilson, and the Secretary, met Mr Ryan, Permanent Assistant Secretary to the Ministry of Food, in London on 7th December, when the proposed Scales of Prices for Beef and Mutton were fully discussed, and also the position in regard to Potatoes and Milk.

On 12th December representatives of the Committee attended a Joint Conference on Wool, convened by the National Farmers' Union and Chamber of Agriculture of Scotland. At that Meeting a deputation was appointed to meet the Prime Minister and the Minister of Supply to discuss the Prices of Wool. Sir Joshua Ross-Taylor and Mr William I. Elliot were nominated as the Society's representatives on that deputation.

Sir Joshua Ross-Taylor reported on the Meeting which the Society's deputation had with Mr Ryan, of the Ministry of Food. He said they had had a very straight talk with Mr Ryan, but they came away feeling somewhat dissatisfied because they had not seen the Minister in person. They had also failed to secure an interview with Mr Burgin, the Minister of Supply.

Sir Joshua also reported on the Meeting between the deputation appointed at the Joint Conference on Wool and the Minister of Food. They were received by Mr Morrison, and they got a very good hearing from him. The deputation was chiefly concerned with the Sheep interests, but, in addition to that, they went thoroughly over much of the ground covered in their interview with Mr Ryan.

They pointed out that, while farming interests were well represented in London, they felt that the advice given was not being acted on. Other interests were coming into the picture before those of the producers. Mr Morrison assured them he was doing his best to see that the producers got reasonable prices. Sir Joshua added that he was afraid the prices for Fat Stock would not be much higher than those announced on 11th November, but he thought there was a prospect of some recognition of their quality cattle in Scotland.

The same deputation had requested an interview with Mr Burgin, Minister of Supply, with regard to the Prices of Wool, but, following that request, on 15th December the prices to be paid for the 1939 clip were published, and an announcement made that the Minister would be prepared to discuss with the appropriate organisations the terms on which the 1940 clip should be taken over.

Continuing, Sir Joshua said they were assured of consultations for the 1940 wool clip, but that did not ease the situation for hill farmers for 1939. He was certain that the prices fixed were unsatisfactory, and would not meet the costs of production. Further, a price of 10d. per lb. for Blackface Wool bore no proper relation to the prices fixed for Whiteface Wools, which were only 2¼d. or 2½d. more.

Mr William I. Elliot, Middletoun, Stow, said sheep farmers were exceedingly disappointed at the prices which had been fixed for wool. Farmers were not asking for a profiteering price, but only for one that was reasonable.

The Chairman expressed the view that, while nothing more could be done with regard to wool at present in the farmers' hands, every effort should be made to get something done in the case of the 1940 clip, and also with regard to the 1940 Potato crop. These, he said, were very important matters, and, unless the Government could restore the confidence of the farmers, the situation might be serious. The farmers were not out for an excessive profit, but they did want a price to cover the cost of production and leave a reasonable margin. That was what the Government had failed to provide.

They did not want, he said, to be too critical of the Government at present. The Government had a big job to handle, and unfortunately had made many mistakes through lack of consultation with practical men. A particular instance was with regard to quality cattle in Scotland. They were told that during war was no time to produce quality cattle, which showed a lamentable lack of knowledge of the fact that such cattle took no more, but rather less, to produce than inferior breeds of cattle.

Colonel F. J. Carruthers of Dormont, Lockerbie, expressed the thanks of the Directors to the Committee for the efforts they had made, and said the matter could be left in their hands with full confidence that they would take whatever further steps were necessary. This was agreed to.

There was also read a letter from the Secretary of the Department of Agriculture for Scotland, dated 23rd December, containing observations by the Secretary of State for Scotland on the various points dealt with in the Memorandum by the Special Committee.

Scottish Milk Records Association.

An application was submitted from the Scottish Milk Records Association for a grant in aid of the work of the Association in view of the discontinuance of the Treasury Grant.

It was decided that the application be remitted to the Finance Committee for consideration and report at next Meeting.

Red Cross Fund.

A letter was submitted from Lord Provost H. Steele, Edinburgh, asking if the Society would be prepared to give a subscription to the Local Fund for the Red Cross.

It was decided that this letter also be remitted to the Finance Committee.

Scottish Agricultural Organisation Society.

On the motion of the Chairman, it was unanimously agreed to confirm the proposed grant of £100 to the Scottish Agricultural Organisation Society for the year 1940.

Finance.

A Minute of Meeting of Finance Committee, dated 3rd January, was submitted and approved.

The Minute dealt with the following matters :—

Members on Military Service.—It was recommended that, in the case of members of the Society on Military Service, where notice was received that they were on Military Service, only one subscription notice be sent annually—viz., the first one, the later notices being withheld. Such members, although in arrears with their subscriptions, would continue to receive the 'Transactions' annually, and to enjoy the other privileges of membership.

Mr John Reid, Showyard Erector.—It was recommended that a sum of £15 be allocated for the purchase of a piece of Silver Plate, or other article, to be presented to Mr John Reid as a memento of his long connection with the Society.

MEETING OF DIRECTORS, 7TH FEBRUARY 1940.

The EARL OF HOME, K.T., and afterwards Mr ALEXANDER MURDOCH, in the Chair.

Present.—*Ordinary Directors*—Mr R. Scott Aiton ; Mr J. W. Alexander ; Mr John D. Allan ; Mr James Clark ; Mr W. I. Elliot ; Mr John Kerr ; Mr James M'Laren ; Mr A. W. Montgomerie ; Mr Robert Park ; Major Sir Samuel Strang Steel, Bt. *Extraordinary Directors*—Mr Alexander Murdoch ; Mr James Paton ; Major Robert W. Sharpe. *Treasurer*—The Earl of Home, K.T.

The Secretary intimated that the Chairman of Directors, Major R. F. Brebner, The Leuchold, Dalmeny, was unavoidably prevented from attending that Meeting.

On the motion of Mr Alexander Murdoch, East Hallside, Cambuslang, the Earl of Home, K.T., was called to the Chair.

Science.

A Minute of Meeting of Science Committee, dated 7th February, was submitted and approved.

The Minute dealt with the following matters :—

Schedule of Unit Values.—The Schedule of Unit Prices of Manures and Feeding-Stuffs, as at that date, had been revised, and it was recommended that it be printed and issued as usual.

Values of Unexhausted Manures and Feeding-Stuffs.—It was recommended that the Table of Values of Unexhausted Manures and Feeding-Stuffs be re-issued, and that it be remitted to Dr Tocher, Consulting Chemist, to revise it in terms of the average Unit Values for the year.

Importation Licenses for Farm Tractors.

A letter was read from Captain Ian S. Robertson, Linkwood, Elgin, with regard to the restriction on Importation Licences for Farm Tractors and Implements, more especially in respect of the Ford-Ferguson Tractor and Implements. It was understood that the Board of Trade had refused an Import Licence for this Tractor, although a certain number had been allowed for Northern Ireland.

It was stated that the Ferguson Tractor had been found to be very suitable for work on all types of soil, and especially on steep and stony land, and that the Ford-Ferguson was a decided improvement and was peculiarly suited to working conditions in many parts of Scotland. It was further stated that many farmers were presently on the outlook for new and improved tractors, and that, in the Elgin area alone, orders were waiting for 50 Ford-Ferguson Tractors.

It was decided that the Secretary be instructed to direct the attention of the Board of Trade to this matter, and to inquire if nothing could be done to withdraw the restriction on import above referred to.

Hill Sheep Farms.

A letter was submitted from the Secretary of the Scottish Land and Property Federation, enclosing copy of a letter, dated 30th January, addressed by the Federation to the Department of Agriculture for Scotland. The letter dealt with the serious position of the Sheep Industry throughout the greater part of the Highlands, and urged the vital necessity for a full inquiry being made into the reasons which had led to the fall in the sheep population in the Highland areas before a decision was come to on any Long-Term Policy for Sheep Farming in the Highlands.

It was decided to remit the letter to the Special Committee appointed by the Society on 1st November 1939 for consideration and report.

Proctor's Tripod Harvesting System.

Mr R. Scott Aiton, Legerwood, Earlston, referred to the decision arrived at by the Directors on 1st November, and requested the Meeting to give reconsideration to Mr Dale's letter of 23rd October 1939. Circumstances, he said, had altered since that date in a way which had not been foreseen. They had not visualised that so early in the War there would be the difficulty in obtaining artificial Feeding-Stuffs which now existed. He thought they had, by means of this system, a valuable reserve of proteins which would go a long way to solve the difficulty in bringing their Stock through next winter. He moved that a Committee be appointed to look further into the possibilities of making hay in Scotland under the Proctor Tripod System.

Mr J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat, seconded.

Mr John D. Allan, Culthill, Murthly, moved that no action be taken.

Major R. W. Sharpe of The Park, Earlston, in seconding the Amendment, said he would prefer that the matter be delayed until a later Meeting, when there was a larger attendance of members of the Board.

Mr R. Scott Aiton thereupon stated that if it was the view of the Meeting that the matter be deferred he was willing to withdraw his Motion, on the understanding that the matter would come up for consideration at next Meeting of the Board. This was agreed to.

Red Cross Agriculture Fund.

Correspondence was submitted between the Red Cross Agriculture Fund Committee in London and the Society, and the Secretary reported on a meeting of that Committee which he had attended at the Mansion House, London, on 12th January. There was also submitted a letter from the Scottish Branch of the British Red Cross Society, Glasgow, inviting this Society to take the initiative in setting up a Committee in Scotland to organise the raising of funds from the Agricultural interests in Scotland on behalf of the Red Cross.

On the recommendation of the Finance Committee, it was decided that the matter be remitted to a Committee to consider as to the advisability of taking action on the lines suggested, and, if so decided, to act with other bodies in convening a Meeting of representatives of Scottish agricultural interests with a view to setting up a Scottish Red Cross Agriculture Committee.

The members of the Committee were appointed as follows: Major R. F. Brebner; The Earl of Home, K.T.; Colonel F. J. Carruthers; Mr George Grant; Mr William C. Hunter; Mr Alexander Murdoch; Mr James Paton; Sir Joshua Ross-Taylor; Major R. W. Sharpe; Mr T. G. Wilson.

Finance.

A Minute of Meeting of Finance Committee, dated 7th February, was submitted. The Minute dealt with the following matters:—

Scottish Milk Records Association.—The Committee had given further consideration to the application from the Scottish Milk Records Association for a grant in aid of the work of the Association in view of the discontinuance of the grant from the Treasury. Certain further information, supplied by the Secretary of the Association, with regard to the estimated financial position for the year beginning 1st April 1940 was submitted.

After full deliberation, the Committee had decided that they could not see their way to recommend that a grant be given.

Master of Works.—The Secretary had reported that the Society's Master of Works, Mr Henry Raeside, had received a temporary appointment, under the War Department, as a Clerk of Works.

It was decided to recommend that the Society pay to Mr Raeside, throughout the duration of this temporary appointment, a sum sufficient to make up the difference between what he was receiving and his salary with the Society.

Mr Alexander Murdoch, East Hallside, Cambuslang, moved approval of the Minute, and this was seconded by Major R. W. Sharpe of The Park, Earlston.

Mr A. W. Montgomerie, Westburn, Cambuslang, expressed disappointment with regard to the recommendation that no grant be given to the Scottish Milk Records Association, and moved that consideration of this matter be deferred until next Meeting.

This was seconded by Mr James Clark, Windlaw House, Carmunnock.

On a vote being taken, the Minute of the Finance Committee was approved by a large majority.

Presentation to Mr John Reid.

The Secretary reported that, with the sum voted by the Board on 3rd January, a Gold Watch had been purchased, as Mr Reid had expressed a preference for this instead of a piece of Silver Plate. The Watch would be handed over to Mr Reid, by the Chairman of Directors, at the Meeting of Members for Nomination of a Director in Aberdeen on Friday, 1st March.

Next Board Meeting.

In view of the fact that the first Wednesday in March coincided with the date of the Stallion Show in Glasgow, it was decided that no Meeting of the Board be called for that date, unless business should arise of sufficient importance to render a Meeting necessary.

PROCEEDINGS AT GENERAL MEETINGS.

GENERAL MEETING, 7TH JUNE 1939.

THE EARL OF HOME, K.T., Treasurer of the Society, in the Chair.

Honorary Members.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary of the Society, moved that, in accordance with the recommendation of the Board of Directors, Their Royal Highnesses The Duke and Duchess of Gloucester be elected Honorary Members of the Society. It was not necessary, he said, to say a word in support of that motion, because they were all very cognisant of the great honour Their Royal Highnesses had paid them last year at Dumfries and how welcome they had been.

The motion was unanimously agreed to.

New Members.

One hundred and ninety-six candidates were balloted for and admitted members of the Society.

Election of Office-Bearers.

The following noblemen and gentlemen were elected office-bearers of the Society for the year 1939-40 :—

President.—The Duke of Portland, K.G., Langwell, Berriedale, Caithness.

Vice-Presidents.—The Duke of Sutherland, K.T., Dunrobin Castle, Golspie; The Earl of Leven and Melville, Glenferness House, Nairn; Sir Donald W. Cameron of Lochiel, K.T., Achnacarry, Spean Bridge, Inverness-shire; Colonel the Hon. Evan Baillie, M.C., of Ballindarroch, Scaniport, Inverness.

Ordinary Directors, 1936.—Mr Francis W. Walker of Leys, Leys Castle, Inverness; Mr John D. Allan, Culthill Implement Works, Murthly; Mr William Brown, Craigton, Bishopton; Lieut.-Colonel Garden Beauchamp Duff, D.S.O., of Hatton, Hatton Castle, Turriff; Sir Joshua Ross-Taylor, Mungoswalls, Duns; Mr J. E. Kerr of Harviestoun, Dollar; Mr William Montgomery, North Milton, Kirkcudbright; Mr William I. Elliot, Middletoun, Stow.

1937.—Mr R. Wemyss Honeyman, Derculich, Strathtay, Perthshire; Mr A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire; Mr Alexander Forbes, Rettie, Banff; Major Sir Samuel Strang Steel of Philiphaugh, Bt., Selkirk; Mr James M'Laren, Cornton, Bridge of Allan; Mr Peter W. Crawford, Dryfeholm, Lockerbie; Mr Ian M. Campbell, Bal Blair, Invershin.

1938.—Mr James Clark, Windlaw House, Carmunnock, Glasgow; Mr James Durno, Crichie, Inverurie; Mr R. Scott Aiton, M.C., Legerwood, Earlston; Mr T. G. Wilson, Carbeth Home Farm, Balfron Station; Mr J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat; Mr Robert Park, Brunstane, Portobello, Midlothian; Mr Finlay MacGillivray of Aldie, Tain; Mr David Blair, Little Inch, Wormit.

1939.—Mr George Grant of Glenfarclas, Blacksboat; The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick; Mr Thomas M'Lay, Dunvegan, Causewayhead, Stirling; Mr Peter Gordon, Balcraig Moor, Port William; Mr James Hope, Eastbarns, Dunbar; Captain Ian S. Robertson, Linkwood, Elgin; Mr Alexander Clark, Strathore House, Thornton; Mr James Kilpatrick, Craigie Mains, Kilmarnock.

Extraordinary Directors.—Mr James R. Lumsden of Arden, Alexandria; Mr Thomas Templeton, Sandyknowe, Kelso; Mr James Paton, Kirkness, Glencraig; Mr Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire; Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh; Mr T. Mercer Sharp, Bardrill, Blackford; Mr James Wither, Awhirk, Stranraer; Major R. W. Sharpe of The Park, Earlston; Mr A. A. Hagart Speirs of Elderslie, Houston House, Renfrewshire; Mr John P. Sleigh of St John's Wells, Fyvie.

Show District.—Major A. D. Campbell, Stanstill, Wick; Mr James H. Fraser, Easter Lovat, Beauly; Lieut.-Colonel M. J. Grant-Peterkin of Grange, Grange Hall, Forres; Mr James MacKessack Leitch, Carden, Alves, Forres; Mr Kenneth P. MacGillivray, Kirkton, Bunchrew, Inverness; Provost Hugh Mackenzie, Inverness; Mr D. A. MacLennan, Balmachree, Inverness; Mr Ralph S. MacWilliam, Garguston, Muir of Ord; Major Gideon C. Rutherford, Proncy, Dornoch; Major John Stirling of Fairburn, Muir of Ord, Ross-shire.

Treasurer.—The Earl of Home, K.T., The Hirsel, Coldstream.

Honorary Secretary.—Colonel F. J. Carruthers of Dormont, Lockerbie.

Special Grants.

The Earl of Home, K.T., Treasurer of the Society, moved approval of the following Special Grants which were recommended by the Board of Directors:—

(1) £500 to the Building Fund of the West of Scotland Agricultural College.
(2) £200, for the current year, to the Animal Diseases Research Association.
(3) £100, for the current year, to the Glasgow Veterinary College.
(4) £50, for the current year, to the Highland Reel and Strathspey Society.

Mr George Grant of Glenfarclas, Blacksboat, seconded, and the grants were approved.

Edinburgh Show, 1939.

Major R. F. Brebner, The Leuchold, Dalmeny, Convener of the Local Committee, reported that the Society had again been fortunate in experiencing favourable weather for the work of erection of the Showyard, and, consequently, he was able to report that the various buildings were nearing completion.

As previously reported, the Corporation of Edinburgh had granted the Society the use of Saughton Mains as a site for the Show. The area covered by the Showyard proper was about 51 acres, while another 30 acres was available, at convenient points around the Showground, for the parking of cars. The larger parking place adjoined the Main Entrance from the Calder Road, while a smaller car park was conveniently placed at the subsidiary entrance at the north-east corner of the Showground. The site was readily accessible from the city, being served by both tramcars and buses. For traffic from other centres, a map had been prepared, showing the approved routes by which such traffic would approach the Showground. In addition to the site, the Corporation of Edinburgh had given a free supply of water and the services of the Cleansing Department in the disposal of refuse. Gas and electricity services, on advantageous terms, had also been made available for the convenience of Standholders.

An excellent entry had been obtained in practically all sections of Live Stock. Cattle and Sheep entries showed a large increase over last year, while Horses, Pigs, and other sections had secured a satisfactory entry. The entries of Implements, Machinery, and Trade Exhibits had again touched a new record level, the frontage applied for amounting to no less than 11,200 feet. The Flower Show was also on a larger scale than formerly, and should again be one of the most attractive and popular sections of the Show.

In addition to the Parades of Live Stock and Jumping Competitions, there would be many other attractions. There would be Sheep Dog Demonstrations and National Fitness Displays, while an outstanding feature would be a Musical Ride by a detachment of H.M. Life Guards, on their first visit to Scotland. The music for the Ride would be provided by the Life Guards Band, which would also render programmes of music from the Band Stand in the Main Square. To give the public a further opportunity of seeing the members of this famous regiment, it had been arranged that they be encamped within the Showground, where their decorated horse lines would be open to inspection. The Pipe Band of the Queen Victoria School, Dunblane, would also be in attendance during the days of the Show.

While mention had been made of the foregoing special features, it was well to point out that the many other attractive features of the Show would continue as usual. Amongst these mention might be made of the Agricultural Education and Research Exhibit, the Buttermaking Competitions, Horse-Shoeing Competitions, Live Stock Judging Competitions, the Rural Industries Section, and Bee-keeping Section. There was also the Poultry Department, in connection with which a new Poultry Judging Competition would be held on the Thursday afternoon.

In view of the variety of interest which the National Show now provided, the Directors felt sure that it should appeal, not only to the agricultural community, but to the great body of the urban population. It was therefore felt that, given favourable weather conditions during the Show week, the Meeting at Edinburgh should be one of the most successful in the history of the Society.

The Chairman said it was a very encouraging report and they should thank Major Brebner and the Local Committee for the efficient way in which they had been carrying out their duties.

Inverness Show, 1940.

Captain Ian S. Robertson, Linkwood, Elgin, reported that arrangements were proceeding for the Show to be held at Inverness in 1940. As reported to the Anniversary General Meeting in January, the Town Council had placed at the disposal of the Society a site at The Bught Park, where the Show was held in 1932. The site was an excellent one, was level, and was covered with good turf, and the Town Council had agreed to make certain improvements with a view to enhancing its suitability for the Show.

The President and Office-bearers for the year had just been elected, and the actual work of preparation for the Show would commence soon after the conclusion of the Show at Edinburgh.

Show of 1941.

Mr James Paton, Kirkness, Glencraig, reported that, at the Annual Meeting in January 1939, it was resolved that, provided a suitable site were available and satisfactory financial and other arrangements could be made, the Society's Show of 1941 be held in the Perth Show Division.

Invitations had been received from the Corporations of both Perth and Dundee, and a Committee recently visited these centres for the purpose of inspecting the sites and discussing details with the City Authorities. They had that day submitted a report on their visit to the Board of Directors, who had unanimously decided that the Show be held at Dundee on the ground known as Station Park, where the Show was held in 1933.

Mr Paton added that he need not recall that the Dundee Show was the most successful in the history of the Society. On their visit, the Committee had found that the same officials were still in office as in 1933, and they had as enthusiastic a Lord Provost in Dundee as on the former occasion, so that everything promised a successful Show in 1941.

Agricultural Education.

Sir Joshua Ross-Taylor, Mungoswalls, Duns, reported on the 40th Annual Examination held at Leeds from 12th to 20th April for the National Diploma in Agriculture. 201 candidates presented themselves for examination. 45 candidates were from Scotland. As a result of the Examination 64 Diplomas were awarded, 1 with Honours. Of the 201 candidates, 21 appeared for all the subjects, and 13 of these obtained the Diploma. 96 had passed certain subjects previously and were completing the Examination this year, and of these 51 obtained the Diploma. The remaining 84 presented themselves for groups of three, four, or five subjects, and of these 32 passed in the subjects for which they appeared and were entitled to appear for the remaining subjects in 1940 or 1941.

Science.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, submitted a report on the work done in his department during the past six months. The substance of Dr Tocher's report appears on pp. 154-161 of this volume.

With regard to the quality of milk Dr Tocher added that he was afraid that some of the dairy cows brought into this country and bought by farmers had been 'rejects' from other countries, and that if that were so it would be very advisable that they should have some new regulation with regard to selection.

Mr A. W. Montgomerie, Westburn, Cambuslang, said that if it was the case that inferior animals were coming in from other countries and thus tending to lower the standard of cattle here, it was time the Society took some action to see that the animals brought in were such as would raise the standard and not lower it.

Vote of Thanks.

On the motion of Lieut.-Colonel Gardon Beauchamp Duff, D.S.O., of Hatton, a vote of thanks was accorded to the Earl of Home for his conduct in the Chair.

The Chairman, in reply, said he was sure the Meeting would like to ask the Secretary to send a message to Mr James Durno, Chairman of Directors, expressing their very great regret at his absence and their earnest hope for his speedy recovery. Mr Durno held out a certain hope that they might see him at the Show. He thought they might also take occasion to congratulate the President of the Society, the Earl of Rosebery, on having won the Derby, and perhaps Major Brebner might convey their congratulations.

MEETING OF MEMBERS HELD IN THE SHOWYARD, EDINBURGH, 21st JUNE 1939.

THE EARL OF ROSEBERY, D.S.O., M.C., President of the Society, in the Chair.

The President, in opening the proceedings, said he should like to say how honoured he was by their having elected him as their President for the year. He was proud to think that he, as President, was seated in the chair which his father occupied many years ago.

The Shows of the Society were a great institution, and he would like particularly to thank the Directors and those responsible for the organisation of this Show. Everyone would agree that they had a most excellent Show and that it was being well run. Most Shows had a hitch, but, so far as he could see, there was no hitch this year. Despite the easterly haar and the unpleasant rain on the previous day there was a record attendance for a first day, not only for Edinburgh, but for any centre. He hoped those figures would keep up, and he trusted that they would pass the 100,000 total attendance mark.

These Shows had always filled a long-felt want, and they were now, he thought, more necessary than ever. We lived, he said, as we all knew, in a very serious time. Our first defence was naturally the Services—the Army, Navy, and Air Force—but he thought we could truly say that our second defence must be the exploitation and increase of everything to do with agriculture. We were more dependent on that than we had ever been. We had some nasty moments in the last Great War, and he thought we must be determined never to let such nasty moments recur. It was for the help of agriculture, and in that way the help of Scotland, that these Shows were such a benefit.

Votes of Thanks.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, moved the following resolution: "That a cordial vote of thanks be accorded to the Lord Provost, Magistrates, and Council of the City of Edinburgh for the excellent site provided for the Show, for the free supply of water, for other public services, and for their co-operation and assistance in all matters tending to promote the success of the Show."

Colonel Carruthers said it was a matter of tradition that the relations between the City of Edinburgh and the Society were of a most cordial character. It was a fine site that had been provided, although perhaps it was rather a long way out. That, however, was a difficulty which had to be faced in every city and town visited by the Show. The difficulty was increasing year by year, and he could only express the hope that in Edinburgh the present site would be available when the Show was due to return in eight years' time. Might he say that he hoped also by that time the tramway line would be extended as far as the entrance gate.

Sir Samuel Strang Steel of Philiphaugh, Bt., Selkirk, seconded, and the motion was cordially adopted.

Lord Provost Steele, in replying, said that the City was always ready and willing to receive strangers in their midst, and was ready to offer hospitality—even to provide water free. As to the question of the site, the Corporation might keep it altogether for the Society if they promised to hold the Show in Edinburgh every year. He did not know, however, that that would be acceptable to Scotland as a whole, and he thought it was only right that they should take that great Show all over Scotland. He could promise this, that there would be a site for the Show in Edinburgh when the Society decided to hold it there again. The Lord Provost concluded by expressing best wishes for the continued success of the Society.

Sir Joshua Ross-Taylor, Mungoswalls, Duns, proposed a vote of thanks to Major R. F. Brebner, Convener, and the members of the Local Committee of Management for the efficient manner in which they had carried out the arrangements for the Show. That vote of thanks, he said, was always received with a great deal of acclaim, and he thought Major Brebner and his Committee merited even greater acclaim, because they had helped the Directors to stage a very fine and large Show. The Committee carried out their duties on the previous day expeditiously, and the judging had been practically all completed before lunch-time. A great deal of the credit lay with the Convener of the Committee, Major Brebner. His motto was "Efficiency," and he had carried out his motto to the extreme on that occasion.

Major R. W. Sharpe of The Park, Earlston, in seconding, said that a Show which moved from place to place like theirs was very dependent on the members of the Local Committee, who helped them as attending members every year.

The motion was unanimously passed.

Major Brebner, in reply, said that that vote of thanks was rather a tradition than a reality. At one time the Local Committee in the various districts had a great deal of work to do in carrying out the arrangements for the Show, but now the duties were comparatively light. He was fortunate in being Chairman of the Committee of Directors which selected the Local Committee, and he had managed to "pack the jury" with a considerable number of the President's tenants, knowing them to be gentlemen of leisure, because they had not to work hard to pay the moderate rent which his lordship charged. A thought that had struck him within the last ten days in watching the growth of this Show was the enormous amount of money involved in it. He saw it described in the Press that day as "a million pound Show." When one considered that this money had to be paid for by agriculture, it made one realise the enormous size and importance of the industry. A fellow Director remarked to him on the previous day, in considering the cost of the Show, what might it be if agriculture was really in a prosperous condition. That was a point that was not noticed sufficiently by the country as a whole—the enormous benefit it would be to the country if agriculture was really in a prosperous condition.

Mr R. Scott Aiton, Legerwood, Earlston, moved that the Society express its appreciation of the satisfactory arrangements made by the railway and transport companies for the expeditious transport of stock, implements, and visitors to the Show. Lord Rosebery, he said, had remarked that the arrangements for the Show had gone off without a hitch. He could assure them that that remark applied especially to the work of the railway and transport companies, and he felt they were due them a specially hearty vote of thanks.

Mr W. I. Elliot, Middletoun, Stow, seconded the motion, which was adopted.

Mr A. E. Sewell, Goods Manager of the Scottish area, L.N.E.R., who acknowledged the vote of thanks, said that, speaking on behalf of the railway companies and of transport generally, they felt honoured that that motion had been passed. It was not often nowadays that the transport industry received thanks for performing duties of that sort, and he was pleased to learn that they had, on this occasion, carried out their duties so satisfactorily. In the old days practically all the transport was in the hands of the railway companies, but now their road transport friends had brought in and would take away a good deal of the traffic from the Show. With regard to the "square deal" campaign of the railway companies, he said that by that campaign they wanted more money, but they were not unmindful of the claims of their customers. They were not unmindful of the claims of agriculture or of the particular needs of Scotland, and they were conscious all the time that they themselves could not be prosperous unless their customers were prosperous. They must work together in this, and he hoped that within the next few years the parties in the merchandise transport world would get together and put their house in order, so that they might be able to improve upon the services they were now giving.

The Earl of Home, K.T., Treasurer of the Society, moved a vote of thanks to the Chairman for the great honour he conferred upon them in being their President, for presiding at that Meeting, and for the great interest he and Lady Rosebery were taking in that Show. They would like to thank him for "Blue Peter," and also for Major Brebner, who was an invaluable help to the Society.

Lord Rosebery, in reply, said that it had been a very lucky year indeed for him, what with "Blue Peter" and the success of his Aberdeen-Angus herd. He owed a great deal to Major Brebner and cordially endorsed all that Lord Home had said about him.

ANNIVERSARY GENERAL MEETING, 3RD JANUARY 1940.

THE EARL OF ROSEBERY, D.S.O., M.C., Former President of the Society, in the Chair.

Annual Report.

Major R. F. Brebner, The Leuchold, Dalmeny House, Chairman of Directors, said he had much pleasure in moving the adoption of the Annual Report by the Directors, copies of which were in their hands. The Directors, he said, had kept the Report as short as possible this year, and he did not think he could add very much to what was contained in the Report.

Honorary membership had been conferred on the Duke and Duchess of Gloucester. It was felt, Major Brebner said, that the election of Their Royal Highnesses would be a fitting memento of their visit to the Dumfries Show in 1938, when the Duke was President of the Society. The Directors very much regretted that Mr James Durno had, owing to the state of his health, to give up the Chairmanship last November. Mr Durno made an ideal Chairman, and they had looked forward to sitting under his Chairmanship for another year.

Referring to the Edinburgh Show, Major Brebner said it was a manifest success in every way. That success was due in no small measure to the very able assistance they had received from the Corporation of Edinburgh and the officials.

As to the colouring of sheep, he thought they might all feel satisfied that this was the last time reference to it would appear in the Annual Report. They hoped it would never appear on the agenda of the business of the Society again.

Major Brebner then referred to the resignation of Mr John Reid, Aberdeen, from the post of Showyard Erector after a very long connection with the Society. The Directors, he said, had decided to give Mr Reid a small present in the form of a piece of silver as a memento of his long and faithful services.

Mr W. I. Elliot, Middletoun, Stow, in seconding the adoption of the Report, said they had a most excellent Show in Edinburgh. Everyone who came in contact with the Show was pleased, and the Exhibitors were satisfied. One or two of the sheep exhibits were slightly coloured, but nothing was done about them, and he did not think anything more would be done. They were very much indebted, he said, to Major Brebner and the Local Committee for the hard work they had done in making the Show the great success it was. They were also pleased to think that their President won the Derby in the year of his Presidentship. Lord Rosebery's father had won the Derby and had been Prime Minister in the same year. There was no doubt as to which was the greater achievement.

The Report was adopted.

Election of Members.

The Secretary submitted a list of 55 candidates for election to membership. These were balloted for and duly elected.

Election of Director.

On the motion of Major R. F. Brebner, Chairman of Directors, Mr John Kerr, Yorkston, Gorebridge, was elected an Ordinary Director of the Society for the Edinburgh Show Division, to fill the vacancy caused by the death of Mr John E. B. Cowper, Gogar House, Corstorphine.

Accounts and Special Grants.

Mr Alexander Murdoch, East Hallside, Cambuslang, in the absence of the Treasurer, the Earl of Home, K.T., submitted the Accounts of the Society for the year ended 30th November 1939.

As at that date, he said, the value of the General Funds of the Society was £164,922, 13s., as compared with £170,412, 19s. 9d. at 30th November 1938, showing a decrease of £5490, 6s. 9d. This decrease was due to the depreciation in the market value of the Society's securities, mainly in Government and Bank Stocks, which amounted to over £9488. The Balance of Receipts over Payments for the year reduced the decrease in the value of the Funds to £5490, 6s. 9d. Mr Murdoch explained why the large sum of £10,375 was in Bank on Deposit Receipt at the close of the financial year. During the month of November, he said, certain of the Society's Investments were repaid, and, along with the surplus resulting from the Edinburgh Show, there was a considerable sum available for re-investment. A sum of £5000 was placed on Mortgage with the Edinburgh Corporation for five years at 4 per cent interest, and there was purchased £1000 of the Government 3 per cent Defence Bonds. There remained a sum of just over £10,000 to be invested. The Directors felt that the Society should support the Government's new Defence Loan when issued, and the available balance was placed on Deposit Receipt pending the issue of the new loan.

The Accounts of the Edinburgh Show, he said, were very gratifying, resulting in a probable surplus of £4918, the highest figure for any of the Society's Shows.

Mr Murdoch then referred to the View of Receipts and Payments for the past year. The Receipts for the year, excluding receipts from Life Subscriptions, amounted to £33,648, or £6143 more than the previous year. Receipts from Life Subscriptions were £997, 7s., as compared with £908, 10s. for 1938. The total Ordinary Expenditure was £26,673. Apart from a small increase in the cost of the Society's 'Transactions' (due to the inclusion of the List of Members), the expenditure under other heads showed a reduction on the previous year.

Mr Murdoch also drew attention to the heading " Extraordinary Expenditure." During the past year, he said, no less than £1562, 2s. was given by the Society in Special Grants to Educational and other bodies. The Society incurred a sum of £200 under its guarantee of £1000 in respect of the Empire Exhibition, making the total Extraordinary Expenditure during the year £1762, 2s. Including the Receipts from Life Subscriptions, the Balance of Receipts over Payments for the year amounted to £3972, 19s. 5d., which he thought was very satisfactory.

Mr Murdoch then moved the adoption of the Accounts and the approval of the following Special Grants recommended by the Board of Directors: (*a*) £100 to the Scottish Agricultural Organisation Society for the year 1940; (*b*) £10 to the Scottish Society for the Prevention of Cruelty to Animals.

Mr T. G. Wilson, Carbeth Home Farm, seconded, and the Accounts were adopted and the Special Grants approved.

Argyll Naval Fund.

On the motion of Mr Alexander Murdoch, the Accounts of the Argyll Naval Fund for the year ended 30th November 1939 were approved.

Inverness Show, 1940.

Mr James Paton, Kirkness, Glencraig, Vice-Convener of the Shows Committee, reported that at a Meeting held on 1st November 1939 the Directors resolved that the arrangements for the Show to be held in Inverness in 1940 be not proceeded with. The action of the Board of Directors was approved.

Future Shows.

Mr Paton also reported that the Directors had further resolved that the next Show of the Society be held at Inverness, and the following Show at Dundee, in accordance with the order already agreed upon.

On the motion of Mr Paton, seconded by Mr John D. Allan, Culthill Implement Works, Murthly, the resolution was confirmed.

Grants to Local Societies.

Mr T. Mercer Sharp, Bardrill, Blackford, submitted the Report on Grants to Local Societies authorised by the Directors, and the Report was approved.

Report by Chemist.

Dr J. F. Tocher, Consulting Chemist to the Society, submitted a Report on the work done in his department during the past half-year. The substance of the Report appears on pp. 154-161 of this volume.

Vote of Thanks.

Sir Joshua Ross-Taylor, Mungoswalls, Duns, in moving a cordial vote of thanks to Lord Rosebery for his conduct in the Chair, said he was sure they appreciated very much that his Lordship should have come to the Meeting. They knew that Lord Rosebery had a great deal to do, and they were grateful to him for his continued interest in the Society. It was a satisfaction to them all that under his Lordship's Presidency they had had one of the most successful Shows, if not the most successful, the Society had experienced.

Lord Rosebery, in acknowledging the vote of thanks, said he was only too pleased to do everything he could for the Highland and Agricultural Society, whose interests he had always at heart. He was very glad to know the Society had had such a good year during his Presidency. The only thing that had come down was the value of their securities, but that, of course, was the case with everyone. He trusted that the war would end before very long, and that the securities would then go up.

APPENDIX

PREMIUM BOOK

OF

THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND

1940

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JOHN STIRTON, Secretary,
The Highland and Agricultural Society of Scotland,
8 Eglinton Crescent,
Edinburgh 12.

Telephone: 23655. ***Telegraphic Address:* "Society, Edinburgh."**

GENERAL NOTICE.

THE HIGHLAND SOCIETY was instituted in the year 1784, and incorporated by Royal Charter in 1787. Its operation was at first limited to matters connected with the improvement of the Highlands of Scotland; but the supervision of certain departments, proper to that part of the country, having been subsequently committed to special Boards of Management, several of the earlier objects contemplated by the Society were abandoned, while the progress of agriculture led to the adoption of others of a more general character. The exertions of the Society were thus early extended to the whole of Scotland, and have since been continuously directed to the promotion of the science and practice of agriculture in all its branches.

In accordance with this more enlarged sphere of action, the original title of the Society was altered, under a Royal Charter, in 1834, to THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND.

The Society avoids questions of political controversy, but in other public matters of practical concern to agriculture it seeks to guard and promote, by every means in its power, the welfare of all interested in the agriculture of Scotland.

Among the more important measures which have been effected by the Society are—

1. Agricultural Meetings and General Shows of Stock, Implements, &c., held in the principal towns of Scotland, at which exhibitors from all parts of Great Britain, Northern Ireland, and Eire (Irish Free State) are allowed to compete.
2. A system of District Shows instituted for the purpose of improving the breeds of Stock most suitable for different parts of the country, and of aiding and directing the efforts of Local Agricultural Societies and Associations.
3. A scheme of Awards to Farm Workers for long and approved service in Scotland.
4. The encouragement of Agricultural Education, under powers conferred by a supplementary Royal Charter, granted in 1856, and authorising the Society to grant Diplomas to Students of Agriculture: and by giving grants in aid of education in Agriculture and allied sciences. In 1900 the Society discontinued its own Examination, and instituted jointly with the Royal Agricultural Society of England an Examination for a National Diploma in Agriculture.
5. The institution of an Examination for a National Diploma in Dairying, jointly with the Royal Agricultural Society of England and the British Dairy Farmers' Association.
6. The institution of an Examination in Forestry for First and Second Class Certificates. Terminated in 1935 in accordance with arrangements made with the Royal Scottish Forestry Society.
7. The advancement of the Veterinary Art, by conferring Certificates on Students who have passed through a prescribed curriculum, and who are found, by public examination, qualified to practise. Terminated in 1881 in accordance with arrangements made with the Royal College of Veterinary Surgeons.
8. The appointment of a Chemist for the purpose of promoting the application of science to agriculture.
9. The establishment of a Botanical Department.
10. The appointment of an Entomologist to advise members regarding insect pests, &c.
11. The annual publication of the 'Transactions,' comprehending papers by selected writers, Prize Reports, and reports of experiments, also an abstract of the business at Board and General Meetings, and other communications.
12. The management of a fund left by John, 5th Duke of Argyll (the original President of the Society), to assist young natives of the Highlands who enter His Majesty's Navy.

CONSTITUTION AND MANAGEMENT.

The general business of THE HIGHLAND AND AGRICULTURAL SOCIETY OF SCOTLAND is conducted under the sanction and control of the Royal Charters, referred to above, which authorise the enactment of Bye-Laws.

The Office-Bearers consist of a President, Four Vice-Presidents, Thirty-two Ordinary and Twenty Extraordinary Directors, a Treasurer, an Honorary and an Acting Secretary, an Auditor, and other Officers.

The Supplementary Charter of 1856 provides for the appointment of a Council on Education, consisting of Sixteen Members—Nine nominated by the Charter and Seven elected by the Society.

STATEMENT OF PRIVILEGES OF MEMBERS.

MEMBERS OF THE SOCIETY ARE ENTITLED—

1. *To receive a free copy of the 'Transactions' annually.*
2. *To apply for District Premiums that may be offered, and for Long Service Awards for Agricultural Employees.*
3. *To report Ploughing Matches for Medals that may be offered.*
4. *To Free Admission to the Shows of the Society.*
5. *To exhibit Live Stock and Implements at reduced rates.*

   Firms are not admitted as Members; but if one partner of a firm becomes a Member the firm is allowed to exhibit at Members' rates.

6. *To have Fertilisers and Feeding-Stuffs, &c., analysed at reduced fees.*
7. *To obtain Reports on the Animal Enemies of Crop Plants and Live Stock (including Poultry).*
8. *To attend and vote at General Meetings of the Society.*
9. *To vote for the Election of Directors.*

   &c., &c.

ANALYSES OF FERTILISERS AND FEEDING STUFFS, &c.

The scale of Fees in respect of Analyses made by the Society's Chemist for Members of the Society will be found under "Chemical Department."

Valuations of manures, according to the Society's scale of units, will be supplied on application being made.

For further particulars, see under Chemical Department.

Chemist.—Mr J. F. TOCHER, D.Sc., LL.D., F.I.C., Crown Mansions, 41½ Union Street, Aberdeen.

REPORTS ON THE ANIMAL ENEMIES OF CROP PLANTS AND LIVE STOCK (INCLUDING POULTRY).

The Consulting Zoologist is prepared to send to any Member of the Society a Report on damage to, or diseases of, plants and animals due to animal agency (Insects, Mites, Worms, Snails, Slugs, Birds, and the Smaller Mammals).

For further particulars, see under Entomological Department.

Consulting Zoologist.—Mr A. E. CAMERON, M.A., D.Sc, Department of Agricultural and Forest Zoology, University of Edinburgh, 10 George Square, Edinburgh.

TERMS OF MEMBERSHIP, &c.

The influence and usefulness of the Society depend mainly upon its strength in membership. The Members, through the Directors whom they elect, have the practical control of the affairs of the Society. The stronger the body of Members, the greater will be the usefulness of the Society. It will therefore be to both their own and the public advantage if all who are interested in agriculture, and who are not already enrolled, should at once become Members of the Society.

ELECTION OF MEMBERS.

Candidates for admission to the Society must be proposed by a Member, and are elected at the half-yearly General Meetings in January and June. It is not necessary that the proposer should attend the Meeting.

RATES OF SUBSCRIPTION.

HIGHER SUBSCRIPTION.

The ordinary annual subscription is £1, 3s. 6d., and the ordinary subscription for life-membership is £12, 12s.; or after ten annual payments have been made, £7, 7s.

LOWER SUBSCRIPTION.

Proprietors farming the whole of their own lands, whose rental on the Valuation Roll does not exceed £500 per annum, and all Tenant-Farmers, Secretaries or Treasurers of Local Agricultural Associations, Factors resident on Estates, Land Stewards, Foresters, Agricultural Implement Makers, Grain, Seed and Manure Merchants, Agricultural Auctioneers, Cattle Dealers and Veterinary Surgeons, none of them being also owners of land to an extent exceeding £500 per annum, and such other persons as, in respect of their official or other connection with agriculture, the Board of Directors may consider eligible, are admitted on a subscription of 10s. annually, which may be redeemed by one payment of £7, 7s., and after eight annual payments of 10s. have been made, a Life Subscription may be purchased for £5, 5s., and after twelve such payments, for £3, 3s.

It must be stated, on behalf of Candidates claiming to be admitted at the Lower Rate of Subscription (10s.), under which of the above designations they are entitled to be admitted at the Lower Rate.

Subscriptions are payable on election, and afterwards annually in January.

According to the Charter, a Member who shall not have objected to his election, on the same being intimated to him by the Secretary, cannot retire until he has paid, in annual subscriptions or otherwise, an amount equivalent to a life composition.

Members are requested to send to the Secretary the names and addresses of Candidates proposed for admission to the Society, at the same time stating whether the Candidates should be admitted at the £1, 3s. 6d. or 10s. rate.

Patron of the Society.—HIS MAJESTY THE KING.

OFFICERS AND DIRECTORS FOR 1939-1940.

President.

The Duke of Portland, K.G., P.C., G.C.V.O., Langwell, Berriedale, Caithness.

Vice-Presidents.

The Duke of Sutherland, K.T., P.C., Dunrobin Castle, Golspie.
The Earl of Leven and Melville, Glenferness House, Nairn.
Sir Donald W. Cameron of Lochiel, K.T., Achnacarry, Spean Bridge, Inverness-shire.
Colonel the Hon. Evan Baillie, M.C., of Dochfour, Ballindarroch, Scaniport, Inverness.

Ordinary Directors.

Year of Election.	
1936	Francis W. Walker of Leys, Leys Castle, Inverness.
	John D. Allan, Culthill Implement Works, Murthly.
	William Brown, Craigton, Bishopton.
	Lieut.-Colonel Garden B. Duff, D.S.O., of Hatton, Hatton Castle, Turriff.
	Sir Joshua Ross-Taylor, Mungoswalls, Duns.
	J. E. Kerr of Harviestoun, Dollar.
	William Montgomery, North Milton, Kirkcudbright.
	William I. Elliot, Middletoun, Stow.
1937	R. Wemyss Honeyman, Derculich, Strathtay, Perthshire.
	A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire.
	Alexander Forbes, Rettie, Banff.
	Major Sir Samuel Strang Steel of Philiphaugh, Bt., Selkirk.
	James M'Laren, Cornton, Bridge of Allan.
	Peter W. Crawford, Dryfeholm, Lockerbie.
	John Kerr, Yorkston, Gorebridge, Midlothian (*elected 3rd January* 1940).
	Ian M. Campbell, Bal Blair, Invershin.
1938	James Clark, Windlaw House, Carmunnock, Glasgow.
	James Durno, Crichie, Inverurie.
	R. Scott Aiton, M.C., Legerwood, Earlston.
	T. G. Wilson, Carbeth Home Farm, Balfron Station.
	J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat.
	Robert Park, Brunstane, Portobello, Midlothian.
	Finlay MacGillivray of Aldie, Tain.
	David Blair, Littleinch, Wormit, Fife.
1939	George Grant of Glenfarclas, Blacksboat.
	The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
	Thomas M'Lay, Dunvegan, Causewayhead, Stirling.
	Peter Gordon, Balcraig Moor, Port William.
	James Hope, Eastbarns, Dunbar.
	Captain Ian S. Robertson, Linkwood, Elgin.
	Alexander Clark, Strathore House, Thornton, Fife.
	James Kilpatrick, Craigie Mains, Kilmarnock.

Extraordinary Directors.

Year of Election.	
1938	Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
	James R. Lumsden of Arden, Dumbartonshire.
	Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
	James Paton, Kirkness, Glencraig.
	Thomas Templeton, Sandyknowe, Kelso.
1939	T. Mercer Sharp, Bardrill, Blackford.
	Major R. W. Sharpe of The Park, Earlston.
	John P. Sleigh of St John's Wells, Fyvie.
	A. A. Hagart Speirs of Elderslie, Houston House, Renfrewshire.
	James Wither, Awhirk, Stranraer.

Show Division Directors.

1939	Major A. D. Campbell, Stanstill, Wick.
	James H. Fraser, Easter Lovat, Beauly.
	Lieut.-Colonel M. J. Grant-Peterkin of Grange, Grange Hall, Forres.
	James MacKessack Leitch, Carden, Alves, Forres.
	Kenneth P. MacGillivray, Kirkton, Bunchrew, Inverness.
	Provost Hugh Mackenzie, Inverness.
	D. A. MacLennan, Balmachree, Inverness.
	Ralph S. MacWilliam, Garguston, Muir of Ord.
	Major Gideon C. Rutherford, Proncy, Dornoch.
	Major John Stirling of Fairburn, Muir of Ord.

Chief Officials, &c.

The Earl of Home, K.T., The Hirsel, Coldstream, *Treasurer.*
Colonel F. J. Carruthers of Dormont, Lockerbie, *Honorary Secretary.*
John Stirton, 8 Eglinton Crescent, Edinburgh, *Secretary.*
Thomas W. Russell, *Chief Clerk.*
John Watt, *Second Clerk.*
George James Gregor, C.A., 8 York Place, Edinburgh, *Auditor.*
J. F. Tocher, D.Sc., LL.D., F.I.C., 41½ Union Street, Aberdeen, *Chemist.*
Henry Raeside, 8 Eglinton Crescent, Edinburgh, *Master of Works.*
A. E. Cameron, M.A., D.Sc., University of Edinburgh, 10 George Square, Edinburgh, *Consulting Zoologist.*
The Very Rev. Charles L. Warr, D.D., 63 Northumberland Street, Edinburgh, *Chaplain.*
Tods, Murray, & Jamieson, W.S., 66 Queen Street, Edinburgh, *Law Agents.*
William Blackwood & Sons Ltd., 45 George Street, Edinburgh, *Publishers.*
Hamilton & Inches, Princes Street, Edinburgh, *Silversmiths.*
Alexander Kirkwood & Son, 9 St James' Square, Edinburgh, *Medallists.*
John Menzies & Co. Ltd., 6 Castle Street, Edinburgh, *Advertising Agents.*
Frank Reid, 55 Blenheim Place, Aberdeen, *Showyard Erector.*
J. P. Lauder, *Officer and Caretaker.*

Chairman of Board of Directors.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.

Chairmen of Committees.

1. *Argyll Naval Fund* . .	MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strathlachlan.
2. *Finance, Chambers, and Law*	The EARL OF HOME, K.T., The Hirsel, Coldstream.
3. *Publications* . . .	Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
4. *Shows*	IAN M. CAMPBELL, Bal Blair, Invershin.
5. *Implements and Machinery* .	Sir JOSHUA ROSS-TAYLOR, Mungoswalls, Duns.
6. *Science*	Major ROBERT W. SHARPE of The Park, Earlston.
7. *General Purposes* . .	Major R. F. BREBNER, The Leuchold, Dalmeny House, Edinburgh.
8. *Education*	Colonel F. J. CARRUTHERS of Dormont, Lockerbie.
9. *Office-Bearers* . . .	Major R. F. BREBNER, The Leuchold, Dalmeny House, Edinburgh.

COMMITTEES FOR 1939-1940.

1. ARGYLL NAVAL FUND

MACLACHLAN OF MACLACHLAN, Castle Lachlan, Strathlachlan, *Convener*.
IAN M. Campbell, Bal Blair, Invershin.
Lieut.-Colonel GARDEN B. DUFF, D.S.O., of Hatton, Hatton Castle, Turriff.
The EARL OF ELGIN AND KINCARDINE, K.T., C.M.G., Broomhall, Dunfermline.
J. E. KERR of Harviestoun, Dollar.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
JAMES M'LAREN, Cornton, Bridge of Allan.
ALEXANDER MURDOCH, East Hallside, Cambuslang, Lanarkshire.
Sir JOSHUA ROSS-TAYLOR, Mungoswalls, Duns.
Major R. F. BREBNER, The Leuchold, Dalmeny House, Edinburgh, Chairman of Board of Directors, *ex officio*.
The EARL OF HOME, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*.
Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

2. FINANCE, CHAMBERS, AND LAW.

The EARL OF HOME, K.T., The Hirsel, Coldstream, Treasurer, *Convener*.
Major R. F. BREBNER, The Leuchold, Dalmeny House, Edinburgh.
IAN M. CAMPBELL, Bal Blair, Invershin.
JAMES DURNO, Crichie, Inverurie.
GEORGE GRANT of Glenfarclas, Blacksboat.
WILLIAM C. HUNTER of Arngask, Glenfarg.
J. E. KERR of Harviestoun, Dollar.
JAMES R. LUMSDEN of Arden, Dumbartonshire.
JAMES M'LAREN, Cornton, Bridge of Allan.
ALEXANDER MURDOCH, East Hallside, Cambuslang, Lanarkshire.
JAMES PATON, Kirkness, Glencraig.
Sir JOSHUA ROSS-TAYLOR, Mungoswalls, Duns.
Major ROBERT W. SHARPE of The Park, Earlston.
T. G. WILSON, Carbeth Home Farm, Balfron Station.
Colonel F. J. CARRUTHERS of Dormont, Lockerbie, Honorary Secretary *ex officio*.
GEORGE JAMES GREGOR, C.A., Auditor, *ex officio*.

3. PUBLICATIONS.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *Convener*.
J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat.
Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
James Durno, Crichie, Inverurie.
Alexander Forbes, Rettie, Banff.
George Grant of Glenfarclas, Blacksboat.
J. E. Kerr of Harviestoun, Dollar.
James R. Lumsden of Arden, Dumbartonshire.
James M'Laren, Cornton, Bridge of Allan.
William Montgomery, North Milton, Kirkcudbright.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
James Paton, Kirkness, Glencraig.
Captain Ian S. Robertson, Linkwood, Elgin.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Major Robert W. Sharpe of The Park, Earlston.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*.

4. SHOWS.

Ian M. Campbell, Bal Blair, Invershin, *Convener*.
James Paton, Kirkness, Glencraig, *Vice-Convener*.
R. Scott Aiton, M.C., Legerwood, Earlston.
J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat.
John D. Allan, Culthill Implement Works, Murthly.
David Blair, Littleinch, Wormit, Fife.
Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
William Brown, Craigton, Bishopton.
Major A. D. Campbell, Stanstill, Wick.
Alexander Clark, Strathore House, Thornton, Fife.
James Clark, Windlaw House, Carmunnock, Glasgow.
Peter W. Crawford, Dryfeholm, Lockerbie.
Lieut.-Colonel Garden B. Duff, D.S.O., of Hatton, Hatton Castle, Turriff.
James Durno, Crichie, Inverurie.
William I. Elliot, Middletoun, Stow.
Alexander Forbes, Rettie, Banff.
James H. Fraser, Easter Lovat, Beauly.
Peter Gordon, Balcraig Moor, Port William.
George Grant of Glenfarclas, Blacksboat.
Lieut.-Colonel M. J. Grant-Peterkin of Grange, Grange Hall, Forres.
R. Wemyss Honeyman, Derculich, Strathtay, Perthshire.
James Hope, Eastbarns, Dunbar.
J. E. Kerr of Harviestoun, Dollar.
John Kerr, Yorkston, Gorebridge, Midlothian.
James Kilpatrick, Craigie Mains, Kilmarnock.
James MacKessack Leitch, Carden, Alves, Forres.
James R. Lumsden of Arden, Dumbartonshire.
Finlay MacGillivray of Aldie, Tain.
Kenneth P. MacGillivray, Kirkton, Bunchrew, Inverness.
Provost Hugh Mackenzie, Inverness.
James M'Laren, Cornton, Bridge of Allan.
Thomas M'Lay, Dunvegan, Causewayhead, Stirling.
D. A. MacLennan, Balmachree, Inverness.
Ralph S. MacWilliam, Gargunston, Muir of Ord.
A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire.
William Montgomery, North Milton, Kirkcudbright.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire
Robert Park, Brunstane, Portobello, Midlothian.
Captain Ian S. Robertson, Linkwood, Elgin.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
Major Gideon C. Rutherford, Proncy, Dornoch.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
A. A. Hagart Speirs of Elderslie, Houston House, Renfrewshire.
Major Sir Samuel Strang Steel of Philiphaugh, Bt., Selkirk.
Major John Stirling of Fairburn, Muir of Ord.
Thomas Templeton, Sandyknowe, Kelso.
Francis W. Walker of Leys, Leys Castle, Inverness.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
James Wither, Awhirk, Stranraer.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

5. IMPLEMENTS AND MACHINERY.

Sir Joshua Ross-Taylor, Mungoswalls, Duns, *Convener*.
James Paton, Kirkness, Glencraig, *Vice-Convener*.
R. Scott Aiton, M.C., Legerwood, Earlston.
J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat
John D. Allan, Culthill Implement Works, Murthly.
Peter W. Crawford, Dryfeholm, Lockerbie.
Lieut.-Colonel Garden B. Duff, D.S.O., of Hatton, Hatton Castle, Turriff.
James Durno, Crichie, Inverurie.
Alexander Forbes, Rettie, Banff.
Peter Gordon, Balcraig Moor, Port William.
James Hope, Eastbarns, Dunbar.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire.
William Montgomery, North Milton, Kirkcudbright.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
Captain Ian S. Robertson, Linkwood, Elgin.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
Major Robert W. Sharpe of The Park, Earlston.
John P. Sleigh of St John's Wells, Fyvie.
Francis W. Walker, of Leys, Leys Castle, Inverness.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
James Wither, Awhirk, Stranraer.
Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, Chairman of Board of Directors, *ex officio*.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

6. SCIENCE.

Major Robert W. Sharpe of The Park, Earlston, *Convener*.
T. G. Wilson, Carbeth Home Farm, Balfron Station, *Vice-Convener*.
R. Scott Aiton, M.C., Legerwood, Earlston.
J. W. Alexander, M.V.O., of Newton, Golfhill, Moffat.
David Blair, Littleinch, Wormit, Fife.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
William Brown, Craigton, Bishopton.
Ian M. Campbell, Bal Blair, Invershin.
Alexander Clark, Strathore House, Thornton, Fife.
James Clark, Windlaw House, Carmunnock, Glasgow.
Peter W. Crawford, Dryfeholm, Lockerbie.
James Durno, Crichie, Inverurie.
William I. Elliot, Middletoun, Stow.
Alexander Forbes, Rettie, Banff.
George Grant of Glenfarclas, Blacksboat.
R. Wemyss Honeyman, Derculich, Strathtay, Perthshire
James Hope, Eastbarns, Dunbar.
J. E. Kerr of Harviestoun, Dollar.
James Kilpatrick, Craigie Mains, Kilmarnock.
James R. Lumsden of Arden, Dumbartonshire.
Finlay MacGillivray of Aldie, Tain.
James M'Laren, Cornton, Bridge of Allan.
Thomas M'Lay, Dunvegan, Causewayhead, Stirling.
A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
Robert Park, Brunstane, Portobello, Midlothian.
James Paton, Kirkness, Glencraig.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
T. Mercer Sharp, Bardrill, Blackford.
A. A. Hagart Speirs of Elderslie, Houston House, Renfrewshire.
Major Sir Samuel Strang Steel of Philiphaugh, Bt., Selkirk.
Thomas Templeton, Sandyknowe, Kelso.
Francis W. Walker of Leys, Leys Castle, Inverness.
James Wither, Awhirk, Stranraer.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.
J. F. Tocher, D.Sc., LL.D., F.I.C., 41½ Union Street, Aberdeen, Chemist, *ex officio*.
A. E. Cameron, M.A., D.Sc., University of Edinburgh, 10 George Square, Edinburgh, Consulting Zoologist, *ex officio*.

7. GENERAL PURPOSES.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, Chairman of Board of Directors, *Convener*.
David Blair, Littleinch, Wormit, Fife.
Alexander Clark, Strathore House, Thornton, Fife.
James Clark, Windlaw House, Carmunnock, Glasgow.
James Durno, Crichie, Inverurie.
William I. Elliot, Middletoun, Stow.
James Hope, Eastbarns, Dunbar.
J. E. Kerr of Harviestoun, Dollar.
James M'Laren, Cornton, Bridge of Allan.
Thomas M'Lay, Dunvegan, Causewayhead, Stirling.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
Robert Park, Brunstane, Portobello, Midlothian.
James Paton, Kirkness, Glencraig.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Major Robert W. Sharpe of The Park, Earlston.
Thomas Templeton, Sandyknowe, Kelso.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

8. EDUCATION.

Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *Convener*.
Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, Chairman of Board of Directors.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
John Stirton, 8 Eglinton Crescent, Edinburgh, Secretary.

9. OFFICE-BEARERS.

Constitution : (1) The four Ordinary Directors for the Division in which the Show for the year is to be held (with the exception of one retiring next year); (2) one Ordinary Director from each of the other Show Divisions; and (3) the Chairman of the Board, Treasurer, and Hon Secretary, *ex officiis*.

Perth .	R. Wemyss Honeyman, Derculich, Strathtay, Perthshire.
	David Blair, Littleinch, Wormit, Fife.
	Alexander Clark, Strathore House, Thornton, Fife.
Glasgow .	A. W. Montgomerie, Westburn Farm, Cambuslang, Lanarkshire.
Aberdeen .	Alexander Forbes, Rettie, Banff.
Borders .	The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Stirling .	James M'Laren, Cornton, Bridge of Allan.
Dumfries .	Peter W. Crawford, Dryfeholm, Lockerbie.
Edinburgh	Robert Park, Brunstane, Portobello, Midlothian.
Inverness .	Ian M. Campbell, Bal Blair, Invershin.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh, Chairman of Board of Directors, *ex officio*.
The Earl of Home, K.T., The Hirsel, Coldstream, Treasurer, *ex officio*.
Colonel F. J. Carruthers of Dormont, Lockerbie, Honorary Secretary, *ex officio*.

REPRESENTATIVES ON OTHER BODIES.

National Agricultural Examination Board and National Dairy Examination Board.

Colonel F. J. Carruthers of Dormont, Lockerbie.
Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.
Sir Joshua Ross-Taylor, Mungoswalls, Duns.
T. G. Wilson, Carbeth Home Farm, Balfron Station.
John Stirton, 8 Eglinton Crescent, Edinburgh.

Edinburgh and East of Scotland College of Agriculture.

John Stirton, *Secretary*, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

West of Scotland Agricultural College.

William Brown, Craigton, Bishopton.

Aberdeen and North of Scotland College of Agriculture.

J. F. Tocher, D.Sc., LL.D., F.I.C., 41½ Union Street, Aberdeen.

Royal (Dick) Veterinary College.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.

Glasgow Veterinary College.

Alexander Murdoch, East Hallside, Cambuslang, Lanarkshire.

Scottish Milk Records Association.

James Kilpatrick, Craigie Mains, Kilmarnock.
William Montgomery, North Milton, Kirkcudbright.
James Wither, Awhirk, Stranraer.

National Trust for Scotland.

The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.

Royal Scottish Agricultural Benevolent Institution.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.

Association for the Preservation of Rural Scotland

The Hon. Walter T. H Scott, Master of Polwarth, Harden, Hawick.

Scottish Country Industries Development Trust.

The Hon. Walter T. H. Scott, Master of Polwarth, Harden, Hawick.
Laurence R. Younger, Dabton, Thornhill, Dumfriesshire

Scottish National Association of Young Farmers' Clubs.

James Paton, Kirkness, Glencraig.

SCOTTISH PLANT REGISTRATION STATION.

Standing Committee of Management.

Major R. F. Brebner, The Leuchold, Dalmeny House, Edinburgh.
G. Bertram Shields, 48 Ravelston Garden, Edinburgh.
James Wither, Awhirk, Stranraer.

Appointed for 5 years from 1st January 1936.

MEETINGS.

General Meetings.—By the Charter the Society must hold two General Meetings each year, and, under ordinary circumstances, they are held in the months of January and June, for the election of Members and other business. Twenty a quorum.

By a resolution of the General Meeting held on 15th January 1879, a General Meeting of Members is held in the Showyard on the occasion of the Annual Show.

With reference to motions at General Meetings, Bye-Law No. 19 provides that—"At General Meetings of the Society no motion or proposal (except of mere form or courtesy) shall be submitted or entertained for immediate decision unless notice thereof has been given two weeks previously to the Board of Directors, without prejudice, however, to the competency of a motion or proposal, of which due notice has not been given, being remitted to the Directors for consideration, and thereafter being disposed of at a future General Meeting."

Directors' Meetings.—The Board of Directors meet (except when otherwise arranged) on the first Wednesday of each month from November to June, inclusive, at 1.30 P.M., and occasionally as business may require, on a requisition by three Directors to the Secretary, or on intimation by him. Seven a quorum.

Committee Meetings.—Meetings of the various Committees are held as required.

Nomination of Directors.—Meetings of Members, for the purpose of nominating Directors to represent the Show Divisions on the Board for the year 1941-1942, will be held at the places and on the days after-mentioned :—

DIVISION.		
1. *Edinburgh.*	Market Buildings, Gorgie, Edinburgh	Wed., 29th Jan. 1941, at 1.
2. *Glasgow.*	Central Station Hotel, Glasgow	Wed., 12th Feb. 1941, at 1.
3. *Stirling.*	Golden Lion Hotel, Stirling	Thur., 13th Feb. 1941, at 1.30.
4. *Perth.*	Salutation Hotel, Perth	Fri., 14th Feb. 1941, at 2.
	(The Meeting will be held in 1942 and 1943 at Cupar ; in 1944 at Perth.)	
5. *Borders.*	........., St Boswells	Thur., 20th Feb. 1941, at 3.
6. *Inverness.*	Station Hotel, Inverness	Tues., 25th Feb. 1941, at 2.
7. *Aberdeen.*	Imperial Hotel, Aberdeen	Fri., 28th Feb. 1941, at 2.30.
8. *Dumfries.*	King's Arms Hotel, Dumfries	Wed., 12th March 1941, at 2.

The nomination of a Proprietor or other Member paying the higher subscription must be made in the 1st, 2nd, 4th and 5th Divisions ; and the nomination of a Tenant-Farmer or other Member paying the lower subscription in the 3rd, 6th, 7th and 8th Divisions.

A Member who has served as an Ordinary Director for a term of four years is not eligible to be nominated again till after the lapse of at least one year. An Extraordinary Director may, however, be nominated as an Ordinary Director.

GENERAL SHOW.

Owing to the outbreak of War, the Board of Directors decided to cancel the Show which was arranged to be held at Inverness on 18th-21st June 1940.

EXAMINATIONS.

Agriculture.—The Examinations in 1940 for the National Diploma in Agriculture will be held as follows:—

Edinburgh Centre.—In the Chambers of the Highland and Agricultural Society of Scotland on Wednesday, 3rd April, and following days. Applications close on Tuesday, 20th February.

Leeds Centre.—At the University of Leeds on Tuesday, 16th July, and following days. Applications close on Monday, 20th May.

Dairying.—The Examination in 1940 (Scottish Centre) for the National Diploma in Dairying will be held at the Dairy School for Scotland, Auchincruive, Ayr, on Wednesday, 4th September 1940, and following days. Applications close on Monday, 29th July 1940.

Forestry.—The Final Examination for the Society's First and Second-Class Certificates in Forestry was held in 1935.

In view of the institution of Examinations for Certificates and Diplomas in Forestry by the Royal Scottish Forestry Society, and by arrangement with that Society, the Board of Directors of the Highland and Agricultural Society of Scotland resolved in 1935 to cease holding further Examinations for the First and Second-Class Certificates, and that, in future, the granting of Certificates and Diplomas be left in the hands of the Royal Scottish Forestry Society.

All communications in connection with Examinations in Forestry should now be addressed to the Secretary, Royal Scottish Forestry Society, 8 Rutland Square, Edinburgh 1.

NATIONAL DIPLOMA IN AGRICULTURE

By a Supplementary Charter under the Great Seal, granted in 1856, the Society is empowered to grant Diplomas.

From 1858 to 1899 the Society held an annual Examination for Certificate and Diploma in Agriculture. In 1873 the Free Life Membership of the Society was granted to winners of the Diploma. In 1882 permission was given to holders of the Diploma to append the letters F.H.A.S. to their names. These arrangements terminated in 1899.

In 1898 it was resolved by the Royal Agricultural Society of England and the Highland and Agricultural Society of Scotland to discontinue the independent Examinations in Agriculture held by the two Societies, and to institute in their stead a Joint-Examination for a NATIONAL DIPLOMA IN AGRICULTURE (N.D.A.). This Examination is now conducted under the management of "The National Agricultural Examination Board" appointed by the two Societies. The first Joint Examination was held in 1900.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF AGRICULTURE

1. The Societies may hold conjointly, under the management of the National Agricultural Examination Board appointed by them, an Annual Examination in the Science and Practice of Agriculture, at a convenient centre.

2. Candidates who pass the Examination will receive the National Diploma in Agriculture—the Diploma to be distinguished shortly by the letters "N.D.A."

3. The Examination will be conducted by means of written papers and oral examinations.

4. In order to be eligible to sit for the Board's Examination in Agriculture, a candidate must—

(*a*) Present a certificate from a recognised Agricultural College that his attainments in the subjects of *General Botany, Geology, General Chemistry, Physics, and Mechanics*, as attested by class and other examinations, are, in the opinion of the authorities of the College, such as to justify his admission to the Board's Examination; *or*

(*b*) Produce evidence that he has passed the 1st B.Sc. or the Intermediate Examination in Science of a British University; *or*

(*c*) Present a School Certificate awarded by a British University Examination Board, and produce evidence that he has continued his study of science for at least a year and has obtained a certificate in Physics, Chemistry and Botany at the Higher Certificate Examination of a British University Examination Board; *or*

(*d*) Present a Leaving Certificate in Science (including Chemistry and Botany) of the Scottish Education Department.

5. In the case of students who satisfy the Board that they have not had the facilities for obtaining the foregoing certificates, the Board will be prepared to consider evidence of equivalent attainment. [Applications under this rule must be lodged *three months* before the date of the annual examination.]

6. *Before sitting for the* PRACTICAL AGRICULTURE *and* FARM MACHINERY AND IMPLEMENTS *papers, all candidates must produce evidence of possessing a practical knowledge of Agriculture obtained by residence on a farm in the British Isles for a period or periods (not more than two) covering a complete year of farming operations.*

7. Candidates will have the option of taking the whole of the following nine papers at one time, or of sitting for a group of *any three, four,* or *five* in the first year and the remaining subjects (at one examination) within the next two years :—

SUBJECT.	Maximum Marks.	Pass Marks.
1. Practical Agriculture (First Paper)	400	240
2. Practical Agriculture (Second Paper)	400	240
3. Farm Machinery and Implements	300	150
4. Land Surveying and Farm Buildings	100	50
5. Agricultural Chemistry	200	100
6. Agricultural Botany	200	100
7. Agricultural Book-keeping	200	100
8. Agricultural Zoology	100	50
9. Veterinary Science and Hygiene	200	100
	2100	1130

NOTE.—Candidates taking the Examination in two groups of subjects are recommended to take Agricultural Chemistry and Agricultural Botany in the first group.

8. A candidate who obtains not less than three-fourths (1575) of the aggregate maximum marks (2100) in the entire Examination will receive the Diploma with Honours, provided that he obtains not less than three-fourths (600) of the maximum marks (800) in the two Practical Agriculture papers.

9. Candidates electing to take the entire Examination at one time and failing in not more than three subjects may appear for these subjects in the following year. Failure in more than three subjects will be regarded as failure in the whole Examination.

10. In the case of candidates electing to take the Examination in two groups—

(*a*) A candidate appearing for a group of *three* subjects and failing in a single subject may, *in the case of a first group,* appear for that subject along with the second group, or, *in the case of a second group,* in the following year. Failure in more than one subject will be regarded as failure in the group.

(*b*) A candidate appearing for a group of *four* or more subjects and failing in not more than two subjects may, *in the case of a first group,* appear for these subjects along with the second group, or, *in the case of a second group,* in the following year. Failure in more than two subjects will be regarded as failure in the group.

11. Non-returnable fees must be paid by candidates as follows:—

Entire Examination . . .	Six guineas.
Group of subjects	Three guineas.
Reappearance for any subjects .	10/6 per subject.

12. The Board reserve the right to postpone, abandon, or in any way, or at any time, modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

EXAMINATIONS IN 1940.

Owing to the interruption, in many cases, of the normal courses of Agricultural Colleges since the outbreak of war, the Board have decided, as an exceptional matter to meet the special circumstances, to hold two Examinations in 1940.

Candidates will be permitted to appear at EITHER of these, but not at both.

The Examinations will be held as under:—

SCOTLAND.—At Edinburgh in the Chambers of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, on WEDNESDAY, 3rd April, and following days. Last date for receiving Applications, TUESDAY, 20th FEBRUARY.

ENGLAND.—At the University of Leeds, on TUESDAY, 16th July, and following days. Last date for receiving Applications, MONDAY, 20th MAY.

Forms of Application for permission to sit at either Examination may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.1." or from "The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12."

SYLLABUS OF SUBJECTS OF EXAMINATION.

PRACTICAL AGRICULTURE.

1.—FIRST PAPER.

1. ***British Farming.***—Arable, stock-raising, dairying—Approximate areas covered by the different systems—Typical examples of each—Area in Great Britain under chief crops—Numbers of live stock—The recent history of agriculture—Short summary of agricultural returns.

2. ***Climate.***—The effect of climate on farming practice—Rainfall—Temperature—Prevailing winds—Weather forecasts.

3. ***Soils.***—The influence of geological formations on the systems of farming—Classification of soils—Character and composition—Suitability for cultivation. Reclamation—Drainage—Irrigation—Warping—Application of lime and marl—Bare fallows—Tillage—Subsoiling—Deep and thorough cultivation.

4. ***Manures.***—The manures of the farm—The treatment of farmyard manure—The disposal of liquid manure and sewage—General

manures—Special manures—Field trials of manures—The application of manures—Period of application and amounts used per acre—Unexhausted value of manures and feeding-stuffs.

5. *Crops.*—Wheat, barley, oats, rye, beans, peas, potatoes, turnips, swedes, mangolds, sugar beet, forage plants, hops, and other crops—Their adaptation to different soils and climates—Varieties—Selection of seed—Judging seeds—Cultivation, weeds and parasitic plants, best methods of prevention and eradication—Harvesting—Storing—Cost of production—Improvement of crops by selection and hybridising—Field trials—Methods which the farmer may adopt—Selection to resist disease—The principles of rotations—Rotations suitable for different soils and climates—Rotations and the maintenance of fertility—Green manuring—Leguminous crops in rotation—Catch crops—The advantages and disadvantages of rotations—Specialised farming—Management of Orchards.

2.—SECOND PAPER.

6. *Live Stock.*—The different breeds of British live stock—Their origin, characteristics, and comparative merits—Suitability for different districts—Breeding—General principles—Selection—Mating—Crossing—Rearing and general management—Breeding and rearing of horses, cattle, sheep, pigs, and poultry. Rearing colts and raising store stock—The foods of the farm—Their composition and suitability for different classes of stock—Purchased foods—Composition and special value—Rations for different kinds and ages of stock—Cost of producing beef, mutton, pork, and milk—Cost of feeding farm horses.

7. *The disposal of Crops, Produce, and Stock.*—Marketing grain and other crops—Sale of stock—Live weight—Dead weight.

8. *Milk.*—The production and treatment of milk—The manufacture of cheese, butter, &c.—The utilisation of by-products.

9. *Farming Capital.*—Calculations of the stocking and working of arable, stock, and dairy farms—Farm valuations—Rent and taxes.

10. *Labour.*—Organisation of labour—piece-work, time-work—labour costings.

11. *Renting a Farm.*—Indications of condition, productive power, and stock-carrying capacity—Leases—Conditions of occupancy.

N.B.—*It is essential that a candidate know his subject practically, and that he satisfy the Examiner of his familiarity with farm work and management.*

3.—FARM MACHINERY AND IMPLEMENTS.

1. *Power.*—The principle of action, construction, method of working, also care and management of steam engines and boilers, gas, oil and petrol engines and agricultural tractors. Cost and working expenses in connection with the above. Estimation of the brake horse-power of engines. Power derived from water. Measurement of the quantity of water flowing in a stream. General arrangement of water-power plants. Water-wheels. Turbines. Pumps—

principle of action and construction. Flow of water through pipes. Hydraulic ram. Windmills.

2. *Agricultural Implements and Machinery.*—The mode of action and the general principles involved in the construction and working of farm implements and machinery. Arrangement of machinery with respect to the power plant. Pulleys and belting. Shafting and bearings. Lubrication. Lifting appliances. Strength and care of chains. Concrete and its use in the construction of simple foundations for engines and machines.

3. *Implements of Cultivation.*—Ploughs—Cultivators—Grubbers—Harrows—Drills. Manure Distributors. Seeding and planting implements.

4. *Implements of Harvesting.*—Mowing and Reaping machines—Rakes—Teddors—Elevators—Potato raisers.

5. *Implements of Transit.*—Carts, waggons, rick lifters, tractors.

6. *Threshing and Food-preparing Machinery.*—Threshing machines, stationary and portable—Screen Winnowers—Hummelers, Chaff cutters—Pulpers—Cake breakers.

7. *Dairy Appliances.*—Milking machines—Cream separators—Churns and other butter-working appliances—Milk delivery cans—Cheese-making utensils—Vats and presses.

N.B.—*Candidates are expected to have had some experience with agricultural machinery and implements under actual working conditions, and to be capable of illustrating their answers, when necessary, by intelligible sketches or diagrams.*

4.—LAND SURVEYING AND FARM BUILDINGS.

1. The use and adjustment of instruments employed in Surveying and Levelling other than the Theodolite.

2. Land surveying by chain, Plotting from field book, and determination of areas surveyed. The simpler "field problems."

3. Levelling and plotting from field book.

4. A knowledge of the various classes of maps published by the Ordnance Survey Department and their Scales.

5. *Roads and Fences.*—The construction and maintenance of farm roads, fences, and ditches.

6. *Land Drainage.*—Methods of draining; mole and pipe drains; cost of construction and maintenance.

7. *Buildings.*—Buildings required on different classes of farms—Economical arrangement of farm buildings—Materials—Construction—Ventilation—Drainage—Water supply—Dimensions of dairy, stables, cowsheds, yard, courts, and piggeries—Accommodation for power—Implement, machinery, and cart sheds—Hay and grain sheds—Shelter sheds—Storage of manure.

N.B.—*Each candidate should have with him at the Examination a pair of compasses, scales of equal parts, including scales of one chain to the inch, 4 feet to the inch, 8 feet to the inch, and the scale fitting the Ordnance Map,* $\frac{1}{2500}$ *or 25·344 inches to the mile, a small protractor, a set-square, and a straight-edge about 18 inches in length.*

5.—AGRICULTURAL CHEMISTRY.

1. *The Atmosphere.*—Its composition and relations to plant and animal life.

2. *Water.*—Rain water—Soil water and drainage—Drinking water—Sewage and irrigation.

3. *The Soil.*—Origin, formation, and classification of soils—Sampling—Analysis—Composition of soils—The chemical and physical properties of soils—The water and air of the soil—Biological changes in the soil—The soil in relation to plant growth—Fertility—Causes of infertility—Improvement of soils.

4. *Manures.*—Theories of manuring—Classification of manures—Origin, nature, and characteristics of manures—Manufacture of manures—Composition, analysis, adulteration, and valuation of manures—Farmyard manure and other natural manures—Green-manuring—Liming, marling, claying—Artificial manures, their origin and manufacture—Fertilisers and Feeding Stuffs Act—Sampling of manures.

5. *Poisons, Antiseptics, and Preservatives.*—General chemical composition and character of insecticides, fungicides, antiseptics, and preservatives used on the farm.

6. *Plants and Crops.*—Constituents of plants—Assimilation and nutrition of plants—Sources of the nitrogen and other constituents of plants—Germination—Action of enzymes—Composition and manurial requirements of farm crops—Food products derived from crops—Manuring experiments.

7. *Animals.*—Composition of animal body—Animal nutrition—Digestion—Assimilation, metabolism, respiration, and excretion.

8. *Foods and Feeding.*—Constituents of foods—Origin, nature, and composition of chief feeding stuffs—Sampling, analysis, and adulteration of foods—Nutritive value and digestibility of food—Functions of chief food constituents—Energy values—Vitamins—Relation of foods to the production of work, meat, milk, and manure—Manurial residues of foods.

9. *Dairy Chemistry.*—The composition of milk, cream, butter, cheese, &c.—Conditions which influence the composition of milk and milk products—Action of ferments and enzymes on milk and milk products—Milk-testing—Analysis and adulteration of dairy products.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

6.—AGRICULTURAL BOTANY.

In addition to a *general knowledge* of the morphology, histology, and physiology of plants, candidates will be expected to possess a *detailed knowledge* of the following subjects :—

The classification of plants of importance in agriculture as shown by a detailed study of the genera, species, and botanical varieties of the British Crop Plants and Weeds included in the following families:—

Ranunculaceæ.
Cruciferæ.
Caryophyllaceæ.
Leguminosæ.
Rosaceæ.
Umbelliferæ.
Compositæ.
Solanaceæ.
Scropulariaceæ.
Labiatæ.
Chenopodiaceæ.
Polygonaceæ.
Liliaceæ.
Gramineæ.

British grasses of agricultural importance: recognition of, at any stage of growth. Habitats of important species. Constitution of the grass flora of good meadows and pastures. Composition of seed mixtures for temporary and permanent leys on various soils. The effects of artificial manures on the flora of grass land.

The weeds of arable and grass land. Poisonous and parasitic weeds. Methods of distribution by seed and vegetatively: of eradication. Weeds as soil indicators. Recognition of the seeds of the common weeds, particularly those characteristically found in clover, grass, &c., seed.

The chief varieties of wheat, barley, oats, clovers, roots, and other farm crops: their suitability for various climatic and soil conditions. The identification of the more important types of cereals by means of their grain characters. Characteristics of good and bad samples of cereals.

Identification of materials used in feeding cakes and meals.

Plant-breeding. Principles of heredity in plants. Pure lines. Fluctuating variability. Selection.

Disease in plants. Diseases due to the effects of parasitic fungi. Resistance to disease: conditions affecting. Fungoid diseases scheduled from time to time by the Ministry of Agriculture and Fisheries.

Yeasts and fermentation.

The general outlines of bacteriology: nitrogen fixation, nitrification, and denitrification. Putrefaction and the bacteriology of milk, butter, and cheese.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

7.—AGRICULTURAL BOOK-KEEPING.

1. Advantages of book-keeping to the farmer. Difficulties and how they can be overcome. Objects of book-keeping.
2. General principles of book-keeping. Double-entry system. Description and use of various books. Ledger, journal, cash-book, petty cash-book, day-books, &c. Entering transactions; posting; trial balance; closing the accounts. Single-entry system.
3. Special ledger accounts: Interest depreciation, rent and rates, improvements, private and household expenses, profit and loss and capital; partnership accounts.
4. Bank business. Opening a bank account. Use of cheques. Deposits and overdrafts.
5. General office work; correspondence, order notes, invoices, rendering accounts, receipts, &c. Filing systems.
6. Farm valuations for book-keeping purposes. Dates for stock-taking and principles of valuation. The farm balance-sheet.
7. Systems of farm book-keeping. Conditions that determine the most suitable system. Advantages and drawbacks of each system.
8. Accounts for the owner-occupier. Treatment of rent. Incidence of rates and tithe in England and Scotland, and their treatment as between farm and estate accounts. Improvements and upkeep and the general principles relating to maintenance claims.

9. Cost accounting. General principles and methods. Advantages, objects, difficulties.

10. Interpretation of results from ordinary and from cost accounts. Precautions necessary. Use of accounts as a guide to efficient management.

11. Income Tax. How the farmer is assessed. Preparation of Income Tax return. Treatment of Income Tax in accounts.

8.—AGRICULTURAL ZOOLOGY.

The Examination is designed to test practical knowledge, and therefore Candidates will be expected to recognise the animals of agricultural importance referred to in the Syllabus.

General.

A general knowledge of the characteristics of living animals and how they differ from plants.

One-celled animals, *e.g.*, Amœba, and many-celled animals.

General outline of the classification of animals and the characters on which it is based.

Organic Evolution. Theories of Heredity.

Special.

I. *Invertebrates.*—A. The Worm Parasites of Stock. Flat and Round Worms. Structure and Life History, for example, of Liver-fluke, Tapeworm, Ascaris. The mode of life and life history of the chief worm enemies of the domesticated animals. Preventive and remedial measures.

B. The Arachnid enemies of Stock: Mange or Scab Mites, Demodex Mites, Ticks. External structure and life history. Control measures.

C. The Insect enemies of Stock: (*a*) External parasites, *e.g.*, gadflies, warble flies, blue-bottles, green-bottles, stable fly, ked, lice; (*b*) Internal parasites, *e.g.*, bot and warble flies.

D. Insects injurious to Crops: Structure and classification of insects. Mode of life and life history of the chief insect pests of agricultural crops.* Control, preventive and remedial measures—natural control; artificial control (Insecticides).

* *The chief pests are detailed in Pamphlets issued by the Ministry of Agriculture and Fisheries.*

E. Other invertebrates of agricultural importance, *e.g.*, earthworms, eelworms, slugs and snails, centipedes and millepedes, gall mites.

II. *Vertebrates.*—Birds: the commoner birds of farm importance, their recognition and an estimate of their work.

Mammals: Outstanding characters for recognition, and the economic importance of:—

1. Ungulata or Hoofed Mammals, *e.g.*, horse, pig, cattle, sheep, deer.
2. Rodentia or Gnawing Mammals, *e.g.*, hares, rabbits, rats, mice, voles, squirrels.
3. Insectivora, *e.g.*, mole, hedgehog, shrew.
4. Carnivora, *e.g.*, dog, fox, polecat, stoat, weasel, badger.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

9.—VETERINARY SCIENCE AND HYGIENE.

1. Elementary anatomy and physiology of the horse, ox, sheep, and pig, and their relation to unsoundness and disease.
2. The general principles of breeding—including the physiology of reproduction, the laws of heredity, the periods of gestation, and the signs of pregnancy in the mare, cow, ewe, and sow.
3. Dentition as a means of determining the age of horses, cattle, sheep, and swine.
4. The management of farm stock in health and disease.

N.B.—*Candidates who are in possession of Laboratory Notes are required to bring them to the Oral Examination in this subject.*

WINNERS OF DIPLOMA IN 1939.

Diploma with Honours.

Kenneth Lyon Blaxter, University of Reading.

Diploma.

Malcolm Addison, East Anglian Institute of Agriculture, Chelmsford.
Elizabeth D. F.-S. Arbuckle, Edinburgh and East of Scotland College of Agriculture.
Andrew Gardner Archibald, West of Scotland Agricultural College, Glasgow.
Ralph Bee, University of Leeds.
David Buchanan Bett, Edinburgh and East of Scotland College of Agriculture.
Kenneth Biggar, Edinburgh and East of Scotland College of Agriculture.
James M'Gregor Black, University of Leeds.
John Emile Blacklock, Harper Adams Agricultural College, Newport, Shropshire.
Richard Earl Blake, University of Reading.
Robert Brown Blyth, West of Scotland Agricultural College, Glasgow.
Ronald Owen Boon, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Charles Raymond Calder, East Anglian Institute of Agriculture, Chelmsford.
Gavin Anderson Catto, University of Aberdeen and North of Scotland College of Agriculture.
Joseph Alfred Chester, South-Eastern Agricultural College, Wye, Kent.
Henry Burns Christie, University of Glasgow and West of Scotland College of Agriculture.
Harold Alfred Collas, University of Reading.

Walter Cranfield, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Thomas Menzies Wingate Davidson, Edinburgh and East of Scotland College of Agriculture.
Wallace Bertram Day, University of Leeds.
John Dickie, Jun., Edinburgh and East of Scotland College of Agriculture.
Ernest Richard Dinnis, South-Eastern Agricultural College, Wye, Kent.
Strickland Hillary Gibson, University of Reading.
Kenneth Alexander Goodman, South-Eastern Agricultural College, Wye, Kent.
George Arthur Gowland, University of Leeds.
John Clement Hawkins, University of Reading.
John William Hodgson, University of Leeds.
Richard Charles Honey, University of Reading.
Philip Stanley Hough, South-Eastern Agricultural College, Wye, Kent.
Douglas C. E. Johns, University of Reading.
John Richard Judson, King's College, Newcastle-upon-Tyne.
Evan Major Lane, King's College, Newcastle-upon-Tyne.
Peter Langmead, University of Reading.
John David Laurance, Midland Agricultural College, Sutton Bonington, Loughborough.
Thomas Alfred Lazenby, University of Leeds.
Albert Leeming, University of Leeds.
Archibald H. R. Lilly, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Edward James Lovell, Seale-Hayne Agricultural College, Newton Abbot, Devon.
John Tailby Lovett-Turner, Royal Agricultural College, Cirencester.
Ian Lorimer Mackenzie, University of Aberdeen and North of Scotland College of Agriculture.
Robert Ian Mackintosh, South-Eastern Agricultural College, Wye, Kent.
Norman Peter Maclaren, West of Scotland Agricultural College, Glasgow.
David John Miles, South-Eastern Agricultural College, Wye, Kent.
George Wilson Milne, Edinburgh and East of Scotland College of Agriculture.
Thomas Mitchell, King's College, Newcastle-upon-Tyne.
Helen B. C. Nightingale, University of Reading.
Paul Harold Northen, South-Eastern Agricultural College, Wye, Kent.
Robert Noel Padget, University of Leeds.
Robert Donovan Park, University of Leeds.
Arthur Edward Parkinson, University of Leeds.
Robert Barron Reid, University of Aberdeen and North of Scotland College of Agriculture.
John Raymond Robertson, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Henry Colgate Robinson, University of Reading.

Charles Fleming Samson, Bell-Baxter Continuation School, Cupar, Fife.
Douglas Gordon Sansom, University of Reading.
William Stanley Shattock, University of Reading.
Francis Alan Shuttleworth, University of Leeds.
William Jonas Webb Slater, Midland Agricultural College, Sutton Bonington, Loughborough.
James Smith, Edinburgh and East of Scotland College of Agriculture.
George Henry Southwood, Seale-Hayne Agricultural College, Newton Abbot, Devon.
John Noel Rapson Thomas, Seale-Hayne Agricultural College, Newton Abbot, Devon.
Cecil Ray Waters, Midland Agricultural College, Sutton Bonington, Loughborough.
Eric Wright, University of Leeds.
John Young, University of Leeds.

Examination Papers of Past Years.

Copies of papers set at past Examinations in Agriculture, so far as available, may be had on application. Price 6d. per set.

Sets of N.D.A. Papers available are those for the years 1936-1939 inclusive.

NATIONAL DIPLOMA IN DAIRYING

This Examination, instituted in 1897, is conducted by "The National Dairy Examination Board," appointed jointly by the Royal Agricultural Society of England, the Highland and Agricultural Society of Scotland, and the British Dairy Farmers' Association.

REGULATIONS FOR EXAMINATION IN THE SCIENCE AND PRACTICE OF DAIRYING

EXAMINATION IN 1940.

Note.—THE REGULATIONS AND SYLLABUS HAVE BEEN REVISED IN RESPECT OF THE EXAMINATION TO BE HELD IN 1941. See p. 38.

1. The Societies may hold annually in England and in Scotland, under the management of the National Dairy Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying; the Diploma to be distinguished shortly by the letters 'N.D.D.'

2. The Examinations will be held on dates and at places from time to time appointed and duly announced.

3. Forms of Entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.1," and must be returned to him duly filled up, with the entry fee, on or before Saturday, 20th July 1940.

4. Forms of Entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12," and must be returned to him duly filled up, with the entry fee, on or before Monday, 29th July 1940.

5. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa. An exception may be made in favour of a candidate reappearing under Regulation* 11 (3) *provided special application is made at the time of entry.*

6. As a preliminary to the acceptance of any application for permission to enter for the Examination, a candidate must produce:—

(1) A certificate testifying that he or she has attended a Diploma Course in the subjects of the Examination covering *two academic years* at an approved Dairy Training Institution and has satisfied the authorities of the Institution of his or her fitness for admission to the Examination. This period shall include six session months' instruction (consisting of not more than two periods) in practical dairy work.

(2) Evidence that he or she has spent at least six months in not more than two periods on an approved Dairy farm and taken part in the work, both in the dairy and on the land. This period must not run concurrently with the six months' practical training referred to in subsection 1.

A Dairy Farm to be approved must have not fewer than fifteen cows kept in daily milking.

7. A candidate who has already taken a Degree in Agriculture of a British University, or a Diploma in Agriculture recognised by the National Dairy Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's *subsequent* training at an approved Dairy Training Institution, providing that such course includes at least six months' training in practical dairy work, and that he or she has worked for at least six months on an approved Dairy Farm.

8. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has:—

(1) A general knowledge of the Management of a Dairy Farm, including the rearing and feeding of Dairy Stock, the candidate being required to satisfy the Examiners that he or she had had a thorough training and practical experience in all the details of Dairy work as pursued on a farm.

(2) A thorough acquaintance, both practical and scientific, with everything connected with the management of a Dairy, and the manufacture of Butter and Cheese.

(3) A general knowledge of Dairy Factory Management, Dairy Hygiene, Dairy Engineering, and Dairy Book-keeping.

(4) Practical skill in Dairying, to be tested by the making of Butter and Cheese.

NOTE.—A candidate must be prepared to make any one of the following varieties of Hard Pressed Cheese, the Examiner in Cheese-making having the option of saying during the Examination what variety a candidate shall make:—

AT THE ENGLISH CENTRE: Cheddar, Cheshire, or Derby.

AT THE SCOTTISH CENTRE: Cheddar, Dunlop, or Cheshire.

9. Candidates will have the option of:—

(a) Taking the whole Examination at one time; or

(b) Taking the Examination in two parts.

A candidate taking the Examination in two parts must take the following subjects at the first sitting: DAIRY FARMING, DAIRY HYGIENE, PRINCIPLES OF DAIRYING, DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING, PRACTICAL CHEESE-MAKING AND BUTTER-MAKING; the remaining three Papers, CHEMISTRY AND PHYSICS, DAIRY BACTERIOLOGY, and DAIRY BOOK-KEEPING, to be taken at the Examination in the following year.

10. The maximum marks obtainable and the marks required for a pass in each subject are as follow:—

	Max.	Pass.
WRITTEN EXAMINATION—		
Dairy Farming	150	90
Dairy Hygiene	100	60
Dairying—		
(*a*) Principles of Dairying	150	90
(*b*) Dairy Factory Management and Dairy Engineering	100	50
Chemistry—		
(*a*) General Chemistry and Physics (*b*) Dairy Chemistry	100	60
Dairy Bacteriology	100	60
Dairy Book-keeping	100	50
PRACTICAL EXAMINATION—		
Hard-pressed Cheese-making	200	150
Blue-veined Cheese-making	100	75
Soft Cheese-making	100	75
Butter-making	200	150
	1400	910

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1120) of the maximum marks (1400) in the Examination, provided that they also obtain at least 80 per cent (400) of the maximum marks (500) in the Dairy Farming, Hygiene, and Dairying papers.

11. A candidate taking the whole Examination at one time:—

(1) who fails in any part of the practical examination shall fail in the whole examination.

(2) who fails in four or more subjects of the written examination shall fail in the whole examination.

(3) who, having passed in the practical examination, fails in not more than three subjects of the written examination may, at the discretion of the Board, appear for those subjects in the following year. The Board may in certain circumstances require evidence of further study in these subjects.

12. A candidate taking the Examination in two parts, and failing in a *single subject* in the first part of the Examination, may, at the discretion of the Board, appear for that subject along with the second part; or, in the case of a *single subject* of the second part, in the following year. The Board may in certain circumstances require evidence of further study in that subject.

Failure in more than one subject will be regarded as failure in that part of the Examination. Failure in any part of the Practical Examination will entail complete failure.

13. The entrance fees will be as follow:—

For the whole Examination taken at one time .	£3	3	0
For the Examination taken in two parts:			
First part	3	3	0
Second part	1	1	0

For reappearance, 10s. 6d. each subject.

14. The Board reserve the right to postpone, to abandon, or in any way or at any time to modify an Examination, and also to decline at any stage to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1940.

SCOTLAND.—At the Dairy School for Scotland, Auchincruive, Ayr. Wednesday, 4th September 1940 and following days. Last date for receiving Applications, Monday, 29th July 1940.

ENGLAND,—At the University and British Dairy Institute, Reading. WRITTEN—Wednesday, Thursday, and Friday, 4th, 5th and 6th September 1940. ORAL AND PRACTICAL—Monday, 16th September 1940, and following days. Last date for receiving Applications, Saturday, 20th July 1940.

SYLLABUS OF SUBJECTS OF EXAMINATION IN 1940.

I.—DAIRY FARMING AND DAIRY HYGIENE.

(a) Dairy Farming.

Soils and Crops.—Types of Soils suitable for dairying. Rotations and systems of cropping. Cultivation, manuring and management of grain, root and forage crops used in dairying. Silage. Temporary and permanent pastures, haymaking.

Plant Physiology.—Roots, shoots, flowers, fruit and seeds of agricultural plants.

Dairy Cattle.—Characteristics of different breeds. Relation of conformation and appearance to Milk Yield. Choice of dairy cattle in relation to climate and soil. The milk yields of the more important breeds, and suitability for the milk trade, cream, butter and cheese production.

The management of a Dairy Herd. Cattle breeding and grading up of dairy stock. Calf rearing and management of young stock.

Milk recording. Systems, and utilisation of results. Details of official schemes.

Foods and Feeding.—Summer and winter feeding of dairy cattle and young stock. Fodder crops and green forage. Roots. Ensilage. Concentrated foods, meals, cakes. Preparation of food. The effect of food on milk and its products.

Pig Keeping.—Characteristics of the more important breeds. The breeding, rearing and fattening of pigs. Production of pork and bacon.

Farm Management.—Systems of dairy farming. The selection, stocking and equipment of typical farms. Organisation of the farm and disposal of produce.

Dairy Economics.—The Dairy Industry of Great Britain and its relationship to Agriculture. The relative importance of the various products. The retail milk trade. Markets, Dairy organisation and co-operation. Modern developments in the Dairy industry. Sources of imported Dairy Produce.

(*b*) Dairy Hygiene.

Animal Physiology.—General functions of the organs of the animal body. Breeding. Parturition. The structure of the udder and the process of milk secretion. Changes which food undergoes during digestion.

Veterinary Science.—The more important diseases of dairy cattle and their treatment. The transmission and eradication of disease.

Milk Hygiene.—Sanitary conditions. Suitability of water supply. Methods of milking and handling of milk. Regulations affecting milk production. Milk in relation to Public Health.

Farm Buildings.—Situation, chief dimensions and construction of cow houses and dairy buildings. Housing for young stock and pigs. Air space and ventilation, drainage and water supply.

II.—DAIRYING.

(*a*) Principles of Dairying.

Milk.—Milking by hand and machinery. Importance of cleanliness. Cooling of milk. Prevention of contamination. Pasteurisation. Sterilisation. Keeping of milk. Milk testing and sampling. Use of Gerber and Babcock Testers. Interpretation of results. Legal standards. Legislation affecting milk production.

Cream.—Separators and their management. Different systems of cream raising and ripening of cream. Changes during ripening. Natural and artificial ripening, and preparation and uses of starters. Preparation of cream for sale. Uses of preservatives. Clotted cream.

Butter.—Churns and butter-making appliances. Preparation of cream for churning. Washing and working butter. Butter milk. Packing and transmission of butter. Selection and keeping of butter. Salting. Use of preservatives. Characteristics of good butter and method of judging. Circumstances affecting the flavour, texture, colour and keeping qualities of butter. Potting butter for keeping. Causes of inferior butter.

CHEESE.—Principles of manufacture. Appliances for cheese-making. The making of the principal varieties of British, Colonial and Continental cheese from cream, whole milk and skim milk. Acidity of milk. Common tests for acidity. Uses of rennet and its substitutes. Whey. Ripening and storage of cheese. Packing and sale of cheese. Making of cream and other soft cheese. Defects in cheese and their causes. Judging cheese.

(b) DAIRY FACTORY MANAGEMENT AND DAIRY ENGINEERING.

FACTORY PRACTICE.—Milk depots and handling of factory milk. Systems of cooling and refrigeration. Pasteurisation. Factory butter and cheese-making. Milk Powders. Condensed milk. Frozen milk. Ice cream. Dried casein. Fermented milk. Lactose and whey-butter. Margarine manufacture. Equipment of milk depots, butter, cheese and dairy factories.

FACTORY MANAGEMENT.—Factory routine. Organisation of labour. Handling of milk on arrival at the factory. Methods of dealing with the milk. Milk contracts. Dairy factory legislation.

DAIRY APPLIANCES AND MACHINERY.—Appliances used in the production and handling of milk, butter and cheese. Care and management of engines and boilers, dairy factory machinery, refrigerating machinery.

BUILDINGS.—Situation, construction and drainage of creameries, milk depots and dairy factories.

III.—CHEMISTRY.

(a) GENERAL CHEMISTRY AND PHYSICS.

CHEMISTRY.—Elements, compounds and mixtures. Chemical symbols, formulæ and equations. Acids, bases, salts: their distinctive properties. Acidity and alkalinity; their quantitative estimation. The Atmosphere: its constituents and impurities; influence on dairying operations. Water: its constitution; pure and natural waters; impurities in water and whence derived. Importance of a good water supply in dairying. General knowledge of elementary chemistry. Oxygen; hydrogen; carbon; nitrogen; phosphorus and sulphur; common metals; common acids; compounds of potassium, sodium, ammonium, calcium.

Elementary organic chemistry; sugar, milk sugar, starch, alcohol, acetic acid, formaldehyde, butyric acid, lactic acid, glycerine, saponification of fats; albumen, casein, pepsin.

PHYSICS.—The different forms of matter; solid, liquid, gaseous. Specific gravity and instruments for determining it. Temperature and methods of measuring it. Expansion; thermometric scales. Influence of temperature in dairy operations. Atmospheric pressure and its measurement. Hygrometry. Heat and its measurement; specific heat. Latent heat. Conduction. Convection. Radiation. Solution. Filtration. Distillation. Simple machines, such as levers, pulleys and light weighing machines.

(b) DAIRY CHEMISTRY.

CHEMISTRY OF MILK.—The nature, composition, properties and chemical constituents of milk. Microscopical appearances presented by milk. The influence of feeding. The changes which occur in the keeping of milk, and how produced. The natural and artificial souring of milk. Rennet, its nature and uses.

MILK PRODUCTS.—Physical and chemical changes involved in the making and keeping of butter and in the manufacture and ripening of cheese. Separated milk. Condensed milk. Fermented milk. Synthetic milk. The use of preservatives.

DAIRY ANALYSIS.—Analytical methods, their theory and practice. A general knowledge of the methods employed in the chemical analysis of milk, butter and cheese. Adulteration of milk, cream, butter and cheese, the ways in which adulteration is practised, the changes in composition thereby produced, and a general knowledge of the methods employed in detecting the same.

CHEMISTRY OF FEEDING.—The principal constituents of food materials and the functions they severally fulfil. The influence of food constituents on milk production. Assimilation and digestion. The manurial value of foods. Milk and milk products as foods.

N.B.—*Candidates are required to bring to the Oral Examination their Laboratory notebooks in sections* (a) *and* (b) *of this subject certified by their teachers as being the record of their Laboratory work carried out during the course.*

IV.—DAIRY BACTERIOLOGY.

GENERAL BACTERIOLOGY.—Bacteria; their form, classification, growth and reproduction. The microscope and its use. Staining and microscopic examination of bacteria. Methods of isolation and cultivation. Preparation of culture media. Fermentations and chemical changes produced by bacteria. Enzymes and their action. Effects of heat, cold, sterilisation, pasteurisation, disinfectants and preservatives on bacteria and enzymes. Bacteriological examination of water supplies.

BACTERIOLOGY OF MILK.—The changes produced by bacteria in milk. Useful forms and their functions. Harmful forms and their effects. Coagulation, discoloration, taints, &c. Bacteriological and other standards in relation to the cleanliness of milk.

MILK PRODUCTS.—The bacteria concerned in the ripening of cream and butter-making. 'Starters,' their preparation and management. The ripening of hard, soft and blue-veined cheese. Bacteria injurious to milk products, including condensed and dried milk.

DAIRY MYCOLOGY.—Moulds and yeasts in dairy practice. Their form, classification, growth and relation to dairy products.

N.B.—*Candidates are required to bring to the Oral Examination in this subject their Laboratory notebooks certified by their teachers as being the record of their Laboratory work carried out during the course.*

V.—DAIRY BOOK-KEEPING.

Reasons for keeping accounts on the farm and in the dairy factory.

General principles of double-entry book-keeping. Use of day-book, journal, ledger, cash-book, analysis cash-book, and petty-cash book. Preparation of profit and loss account, capital account and balance sheet. Adjustments necessary for the owner-occupier.

Valuations. Basis of valuations for accounting purposes on the farm and in the dairy factory. Dates for stocktaking.

Methods of accounting suitable for dairy farms and factories. Forms for milk-retailing, cheese-making, and butter-making.

Preparation of a cost account for milk production.

Interpretation and use of accounting results, with special reference to their practical application.

Opening a Bank account. Cheques, deposits, and overdrafts.

Assessment of the Farmer for Income Tax purposes.

VI.—PRACTICAL SKILL IN DAIRY WORK.

Candidates must be prepared—(1) to produce before the Examination a satisfactory certificate of proficiency in the milking of cows, signed by a practical Dairy Farmer, and to satisfy the Examiners by a practical test, if so required; (2) to churn and make into Butter a measured quantity of Cream; and (3) to make one Cheese of each of the following varieties: (1) Hard-pressed, of not less than 30 lb. (see Note to Reg. 8 (4)); (2) Veined or blue-moulded, of not less than 10 lb.; and (3) also to make one or other of the following Soft Cheeses: Cambridge, Camembert, Coulommier, or Pont l'Evêque.

WINNERS OF DIPLOMA IN 1939.

SCOTTISH CENTRE.

(All the candidates at the Scottish Centre had been students at the Dairy School for Scotland, Auchincruive, Ayr.)

Diploma.

RALPH BEE, 35 Church Street, Swinton, Mexborough, Yorks.
JAMES M'GREGOR BLACK, Ivanholme, 31 Spring Street, Huddersfield.
MARGARET SEMPLE BLACK, 11 Westbourne Terrace, Glasgow.
ROBERT BROWN BLYTH, 27 Kinmount Avenue, Cathcart, Glasgow.
RICHARD DOUGLAS BRASSINGTON, Peel Cottage, Barthomley Road, Audley, Stoke-on-Trent.
JESSIE BUCHANAN, 70 St Meddan's Street, Troon, Ayrshire.
HENRY BURNS CHRISTIE, Hill of Camstradden, Luss, Dumbartonshire.
MARGARET MACFARLANE CRICHTON, 49 Murrayfield Gardens, Edinburgh.

Enid H. S. Davidson, Airlie House, St James' Park, Brechin, Angus.
Wallace Bertram Day, British Oil and Cake Mills Experimental Farm, Bilton, Hull.
Alastair Patrick Grant, Ballinluig Farm, Grantown-on-Spey.
William Hay, Dubiton, Aberchirder, by Huntly.
Hilda Hemsley, Horsley Hill Farm, South Shields, Co. Durham.
Mary Stephenson Jackson, Pickett How, Egremont, Cumberland.
John Richard Judson, 22 Percy Street, West Wylan, Prudhoe Station, Northumberland.
Marion Macdonald, Penefiler, Portree, Isle of Skye.
Morag Macdonald, Edinglassie, Strathdon, Alford, Aberdeenshire.
James Keith Macfarlane, "Strathtay," Tunstall Avenue, West Hartlepool, Co. Durham.
Hugh M'Intyre, East Kirkcarswell, Dundrennan, Castle Douglas.
Ian Lorimer Mackenzie, Pittengardner, Fordoun, Kincardineshire.
Donald John Maclean, 8 Ferry Road, Leverburgh, Isle of Harris.
James Mechie, Overtown Manse, by Wishaw, Lanarkshire.
Margaret Dean Menzies, High Manse, Tobermory, Isle of Mull.
Edith Mary Millican, Backstone Bank, Wolsingham, Bishop Auckland, Co. Durham.
Arnold Mitchell, 135 Halifax Road, Todmorden, Lancs.
William Kay Murray, 35 Castlehill Road, Ayr.
Edith Margaret Nicolson, 4 Greenfield Place, Lerwick, Shetland.
Robert Noel Padget, Islebeck Farm, Thirsk, Yorks.
Robert Donovan Park, Oakwood Farm, Styal, near Manchester.
Arthur Edward Parkinson, Hale Hall, Wharles, near Kirkham, Lancs.
George Precious, Field Head Farm, Shepley, Huddersfield.
Isabella Ure Nelson Robertson, 75 Clouston Street, Glasgow.
Francis Alan Shuttleworth, Dawslack Farm, Utley, Keighley, Yorks.
James Gordon Smith, 37 Barterholm Road, Paisley.
Andrew John Kerr Steven, South Biggart Farm, Lugton, by Kilmarnock.
Annie Rebecca Telfer, Newbiggen Farm, Cambo, Morpeth, Northumberland.
Arthur Ronald Tones, School House, Kildale, Yorks.
Frank Tucker, 88 Rockliffe Road, Linthorpe, Middlesbrough.
Allena Forbes Watt, Birkenburn, Keith, Banffshire.
Harvey Stewart Watt, Stirling Cottage, Torphins, Aberdeenshire.
Kenneth Harold Weldon, Hall Farm, Ecclesfield, near Sheffield.
Eric Laurence Whitehouse, "The Grove," Crowtrees Lane, Rastrick, Brighouse, Yorks.
John Young, 4 Bethel Terrace, Hurst Road, Hebden Bridge, Yorks.

English Centre.

Diploma.

Harold Wells Acaster, Institute of Agriculture, Hutton, Preston.
Douglas Adams, Midland Agricultural College, Sutton Bonington, Loughborough.
Mary Baggs, University of Reading and British Dairy Institute.

John Charles Holland Baker, Midland Agricultural College, Sutton Bonington, Loughborough.

Hannah Eurwen Bevan, University of Reading and British Dairy Institute.

Ronald Owen Boon, Seale-Hayne Agricultural College, Newton Abbot, Devon.

William Edward Buck, Institute of Agriculture, Hutton, Preston.

Bernhard Cohn, University of Reading and British Dairy Institute.

Walter Cranfield, Seale-Hayne Agricultural College, Newton Abbot, Devon.

Nancy Noel Creasey, Midland Agricultural College, Sutton Bonington, Loughborough.

Annie Elizabeth Cunnington, Midland Agricultural College, Sutton Bonington, Loughborough.

Doris Pamela Davie, East Anglian Institute of Agriculture, Chelmsford.

Annie Jane Davies, University College of Wales, Aberystwyth.

Ruth Redfern Davies, Studley College, Warwickshire.

Richard Evelyn Dilworth, Midland Agricultural College, Sutton Bonington, Loughborough.

Eirene Doris Doveton, Institute of Agriculture, Hutton, Preston.

William Cyril Thomas Evans, University College of Wales, Aberystwyth.

Richard Fawcett, Seale-Hayne Agricultural College, Newton Abbot, Devon.

Kirsteen Mary Glanville, Institute of Agriculture, Hutton, Preston.

Ruth Ursula Glossop, Midland Agricultural College, Sutton Bonington, Loughborough.

Nancy Louise Greed, University of Reading and British Dairy Institute.

David George Griffiths, University College of Wales, Aberystwyth.

Madan Mohan Gupta, Midland Agricultural College, Sutton Bonington, Loughborough.

Catherine Bettie Haine, Studley College, Warwickshire.

George Cuthbert Haslam, Midland Agricultural College, Sutton Bonington, Loughborough.

Alfred John Hayes, East Anglian Institute of Agriculture, Chelmsford.

Betty Heald, Studley College, Warwickshire.

Margaret Elizabeth Hill, Institute of Agriculture, Hutton, Preston.

Betty Mary Hutchings, Institute of Agriculture, Hutton, Preston.

Margaret Effie Hyman, Midland Agricultural College, Sutton Bonington, Loughborough.

Nora Margaret Jackson, Institute of Agriculture, Hutton, Preston.

Elizabeth Leah Jones, University College of Wales, Aberystwyth.

Hannah Margaret Jones, University College of Wales, Aberystwyth.

Henry Richard Jones, University College of Wales, Aberystwyth.

Margaret Irene Jones, University of Reading and British Dairy Institute.

Jane Napier Landon, University of Reading and British Dairy Institute.

MARJORIE ELSIE MIXTER, University of Reading and British Dairy Institute.
DONALD IVAN OLIVER, Seale-Hayne Agricultural College, Newton Abbot, Devon.
BENJAMIN ELFYN DAVID MORRIS OWEN, University College of Wales, Aberystwyth.
NORMAN SPENCER PERFECT, East Anglian Institute of Agriculture, Chelmsford.
MARIAN EVELINE POLLOCK, Studley College, Warwickshire.
FRANK WILSON PORTER, Midland Agricultural College, Sutton Bonington, Loughborough.
MONA QUINN, Institute of Agriculture, Hutton, Preston.
ROSEMARY ELIZABETH RIX, Studley College, Warwickshire.
ANNE ROBERTS, University College of Wales, Aberystwyth.
JOHN ROBINSON, Institute of Agriculture, Hutton, Preston.
MILDRED SCURLOCK, University of Reading and British Dairy Institute.
ERNESTINE ELISABETH SMITH, East Anglian Institute of Agriculture, Chelmsford.
JEAN FENTIMAN SMITHSON, Studley College, Warwickshire.
HARRY MAWER STRAWSON, Midland Agricultural College, Sutton Bonington, Loughborough.
JOHN NOEL RAPSON THOMAS, Seale-Hayne Agricultural College, Newton Abbot, Devon.
CHARLES BARRINGTON THOMPSON, Midland Agricultural College, Sutton Bonington, Loughborough.
NANCY HALLAM WHITE, University of Reading and British Dairy Institute.
MARGARET DOREEN WILDE, University College of Wales, Aberystwyth.
CATHERINE ANNE WILLIAMS, University College of Wales, Aberystwyth.
DILYS F. WILLIAMS, University of Reading and British Dairy Institute.
ELIZABETH LLOYD WILLIAMS, University College of Wales, Aberystwyth.
JEAN HEULWEN WILLIAMS, University College of Wales, Aberystwyth.
PEARL MARJORIE WOOD, University of Reading and British Dairy Institute.

EXAMINATION PAPERS OF PAST YEARS.

Copies of papers set at past Examinations in Dairying may be had on application. Price 6d. per set. Papers available are those for the years 1936-1939 inclusive.

REVISED REGULATIONS AND SYLLABUS
for Examination in the
SCIENCE AND PRACTICE OF DAIRYING.

EXAMINATION IN 1941.

1. The Societies may hold annually in England and Scotland, under the management of the National Dairy Examination Board appointed by them, one or more examinations for the National Diploma in the Science and Practice of Dairying, on dates and at places from time to time appointed and duly announced; the Diploma to be distinguished shortly by the letters 'N.D.D.'

2. Forms of entry for the Examination in England may be obtained from "The Secretary, Royal Agricultural Society of England, 16 Bedford Square, London, W.C.1." and must be returned to him duly filled up, with the entry fee, on or before .... July 1941.

3. Forms of entry for the Examination in Scotland may be obtained from "The Secretary, Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh 12," and must be returned to him duly filled up, with the entry fee, on or before .... July 1941.

4. Any candidate may enter for the Examination either in England or Scotland, but not in both, and a candidate who has once taken part in an Examination in England cannot enter for an Examination in Scotland, or *vice versa. An exception may be made in favour of a candidate reappearing under Regulation* 10 (3) *provided special application is made at the time of entry.*

5. As a preliminary to the acceptance of any application for permission to enter for the Examination, a candidate must produce:—

(1) from the Head of an approved Dairy Training College or Institute:

- (*a*) a statement that he or she is in possession of the General School Certificate (England), the Day School Certificate Higher (Scotland), or the School Certificate of the Central Welsh Board; *or* a statement that his or her general education is of an equivalent standard;
- (*b*) a certificate testifying that he or she has satisfactorily completed courses in (i) soils, crops, rotations, cultivations, manuring of crops (other than pastures), and plant physiology; (ii) elementary chemistry, physics and mechanics, *and*
- (*c*) that he or she has also satisfactorily attended a Diploma or Degree course in the subject of the Examination covering at least two academic years at an approved Dairy Training College or Institute. *This period*

shall include six months' instruction (consisting of not more than two periods) in practical dairy work.

(*d*) a certificate of proficiency in soft cheese-making.

(2) a certificate of proficiency in the milking of cows, signed by a dairy farmer, and evidence that he or she has spent at least six months in not more than two periods on an approved dairy farm and taken part in the work, both in the dairy and on the land. *This period must not run concurrently with the six months' practical training referred to in sub-section* 1 (*c*).

A Dairy Farm to be approved must have not fewer than fifteen cows in milk.

6. A candidate who has already taken a Degree in Agriculture of a British University, or a Diploma in Agriculture recognised by the National Dairy Examination Board, will be allowed to enter for the National Diploma in Dairying Examination after one year's subsequent training at an approved Dairy Training College or Institute, providing that such course includes at least six months' training in practical dairy work, and that he or she has spent at least six months on an approved dairy farm, and taken part in the work both in the dairy and on the land.

7. In the Examination a candidate will be required to satisfy the Examiners by means of written papers, practical work, and *viva voce*, that he or she has :—

(1) A general knowledge of the management of a dairy farm, including the rearing and feeding of dairy stock, the candidate being required to satisfy the Examiners that he or she has had a thorough training and practical experience in all the details of dairy work as pursued on a farm.

(2) A thorough acquaintance with the practical details of the management of a dairy, and the manufacture of butter and cheese, together with a working knowledge of the scientific principles involved in these operations.

(3) A general knowledge of dairy book-keeping.

(4) Practical skill in dairying, to be tested by the making of butter and cheese.

NOTE.—A candidate must be prepared to make any one of three varieties of Hard Pressed Cheese, two of which must be Cheddar and Cheshire, these three to be specified on his application form, the Examiner in Cheese-making having the option of saying, during the Examination, which a candidate shall make.

8. Candidates will have the option of :—

(*a*) Taking the whole Examination at one time ; or

(*b*) Taking the Examination in two parts.

A candidate taking the Examination in two parts must take the following subjects at the first sitting: DAIRY HUSBANDRY, MILK AND MILK PLANT, CREAM AND BUTTER, CHEESE AND CHEESE PRODUCTS, PRACTICAL CHEESE-MAKING AND BUTTER-MAKING ; the remaining three Papers, DAIRY CHEMISTRY, DAIRY MICROBIOLOGY, and DAIRY BOOK-KEEPING, at the Examination in the following year.

9. The maximum marks obtainable and the marks required for a pass in each subject are :—

		Max.	Pass.
WRITTEN AND ORAL EXAMINATION—			
Dairy Husbandry	(3 *hours' paper*)	150	90
Milk and Milk Plant	(2 *hours' paper*)	100	60
Cream and Butter	„ „	100	60
Cheese and Cheese Products	„ „	100	60
Dairy Chemistry	„ „	100	60
Dairy Microbiology	„ „	100	60
Dairy Book-keeping	„ „	100	50
PRACTICAL EXAMINATION—CHEESE-MAKING—			
(*a*) One of the three Hard Pressed cheeses specified by the candidate on his form of application		200	150
(*b*) Blue-veined		100	75
BUTTER-MAKING		200	150
		1250	815

Honours will be awarded to candidates obtaining an aggregate of 80 per cent (1000) of the maximum marks (1250) in the Examination, provided that they also obtain at least 80 per cent (360) of the maximum marks (450) in the Dairy Husbandry, Milk and Milk Plant, Cream and Butter, and Cheese and Cheese Products papers.

10. A candidate taking the whole Examination at one time :—

(1) who fails in any part of the practical examination shall fail in the whole examination.

(2) who fails in four or more subjects of the written examination shall fail in the whole examination.

(3) who, having passed in the practical examination, fails in not more than three subjects of the written examination may, at the discretion of the Board, appear for those subjects in the following year. The Board may in certain circumstances require evidence of further study in those subjects.

11. A candidate taking the Examination in two parts, and failing in a single subject in the first part of the Examination, may, at the discretion of the Board, appear for that subject along with the second part; or, in the case of a single subject of the second part, in the following year. The Board may in certain circumstances require evidence of further study in that subject.

Failure in more than one subject will be regarded as failure in that part of the Examination. Failure in any part of the Practical Examination will entail complete failure.

12. The entrance fees will be as follows :—

For the whole Examination taken at one time	£3	3	0
For the Examination taken in two parts :			
First part	3	3	0
Second part	1	1	0

For reappearance, 10s. 6d. each subject.

13. The Board reserve the right to postpone, to abandon, and to modify an Examination, and also to decline to admit any particular candidate to the Examination.

DATES OF EXAMINATIONS IN 1941.

SCOTLAND.—(To be announced later.)
ENGLAND.—(To be announced later.)

SYLLABUS OF SUBJECTS OF EXAMINATION IN 1941.

I.—DAIRY HUSBANDRY.

Buildings of the dairy farm; structural features, sanitation, and water supply.

Selection, stocking, and equipment of typical dairy farms; organisation of the dairy farm.

The utilisation of the crops of the dairy farm.

Pastures and pasture management; dried grass, silage.

Foods used on the dairy farm; characteristics and relative value.

Live stock of the dairy farm; essential conformation features of the dairy cow and dairy bull; British dairy breeds; milk recording.

Breeding of dairy stock, principles and practice; selection, care, and management of the sire; calf rearing; raising of dairy heifers.

Management of dairy herds; self-contained herds; attested herds.

Feeding of dairy cows for milk production; feeding standards; construction and use of rations.

Common ailments and diseases of dairy stock; milk fever, bloat, cow pox, mastitis, contagious abortion, tuberculosis, Johne's disease, sterility, scour, hoose, notifiable animal diseases.

Hygienic milk production; hand and machine milking; cleaning and care of milking machines and utensils used in milk production; milk coolers and farm sterilising equipment.

Pigs on the dairy farm; suitable breeds for bacon and for pork production; housing accommodation; breeding, feeding, and management of pigs; fattening of pigs; pig recording; common ailments and diseases of pigs.

II.—MILK AND MILK PLANT.

Utilisation of milk and milk products in Great Britain; sources of supply; the principles of organised marketing. Milk contracts.

Properties of milk.

Variations in the composition of milk; legal minimum standards for milk; statutory rules and orders relating to milk and milk products.

Sources of taints and contamination in milk. Abnormal milk. Flavour in milk and the contributing factors.

Grades of milk.

Food value of milk. Hard and soft curd milk.

Transportation of milk; milk churns; road and rail tanks; processing of milk at milk depots; sampling and testing of milk; effects of heat on milk; essentials for efficient pasteurisation; progressive stages in milk treatment at milk plants; weighing; filtering; clarifying, pumping, pasteurising, cooling, bottling, and capping; refrigeration; cold storage.

Disposal of wastes from milk plants.

Distribution of milk.

Special treatment of milk; homogenisation, irradiation, stassanisation, commercial sterilisation, high temperature, short time heat treatment.

Fermented milk preparations, Yoghurt, Kefir, and cultured butter milk.

Elementary principles of condensing and drying of milk.

III.—CREAM AND BUTTER.

Cream.—Production and consumption of cream in Great Britain. Utilisation of cream; grades of cream, regulations for the sale of cream; different methods of obtaining cream from milk.

Operation and management of cream separators, hand and power.

Efficiency of separation; cleaning and sterilisation of separators.

Testing of cream.

Factors influencing the flavour, physical properties, and keeping qualities of cream; homogenisation of cream.

Pasteurisation of cream; cooling and storage; marketing of cream.

Cream preparations; whipped cream, clotted cream, sterilised cream, reconstituted cream.

Cream appliances, homogenisers, cream sterilising plant, pasteurisers, cream coolers.

Ice Cream.—Types of plant used. Materials used in, and preparation of mixes. Pasteurising, ripening, freezing, and hardening.

Butter.—Production and consumption of butter in Great Britain; sources of imports.

Food value of butter; regulations governing the production and sale of butter.

Selection and grading of cream for butter-making.

Treatment of cream prior to churning; heating, cooling; preparation and use of starters.

Churning of cream; factors affecting churning and loss of butter fat.

Washing of butter; purity of wash water.

Methods of working and salting of butter; quality of salt.

Packing of butter and treatment of liners and butter boxes; storage of butter; refrigeration in factories and in transport.

Grading and judging butter. National Mark butter. Common defects in butter and their causes.

Special systems of butter-making; sweet cream butter; whole milk butter; neutralised cream butter; whey butter.

Utilisation of by-products of butter-making; separated milk and butter milk. Casein.

Butter-making equipment; separators; pasteurising plant, cream coolers, cream pumps, starter-preparing apparatus, cream ripeners, churns and butter workers. Butter packers, moulders and blenders, butter cutting, and wrapping machines.

IV.—CHEESE AND CHEESE PRODUCTS.

Production and consumption of cheese in Great Britain; sources of imports.

Food values of cheese.

Principles of cheese-making; varieties of cheese.

Hard-pressed cheese. Agents used in manufacturing process; starter, colour, rennet, salt.

Milk for cheese-making; care and management.

Detailed knowledge of the manufacture of Cheddar and Cheshire, and one of the following: Derby, Dunlop, Leicester, Gloucester, or Lancashire.

Manufacture of cheese from pasteurised milk.

Small hard-pressed cheeses: Caerphilly, Smallholder, &c.

Difficulties experienced in the manufacturing process; causes of fast and slow working, gas formation, ropy and slimy whey.

Ripening and storage of cheese.

Grading and judging of cheese; National Mark standards.

Marketing of cheese.

Defects in the flavour, body, and texture, and in the colour of mature cheese.

Manufacture of Stilton and Wensleydale cheeses, blue-veined and white.

Soft cheese-making.

Cream cheeses. Single and double cream cheeses.

Cheese products. Manufacture of processed cheese, and cheese spreads.

Usual cheese factory equipment and arrangement; cheese vats, curd knives, curd agitator, cheese press, curd mill; cheese hoops, cheese turners, paraffining apparatus, pasteurising equipment, air conditioning plant.

Utilisation of whey.

V.—DAIRY CHEMISTRY.

The principal constituents of foodstuffs and the functions they fulfil. Assimilation and digestion. Vitamins.

The nature and composition of milk, colostrum, butter, cheese, cream, separated milk, butter milk, whey, casein, and lactose.

Drying and condensation of milk and milk products.

Variation in composition of milk.

Milk souring, rennet coagulation, preparation and ripening of cheese, storage of butter, salt for dairy purposes.

Metals and their influence on milk and milk products. Taints. Effects of heat on milk. Abnormal milk.

The sampling and analysis of milk and milk products. Freezing point test for milk.

Commercial routine analysis of foodstuffs.

Chemical aspects of water supply.

Dairy detergents and disinfectants.

N.B.—*Candidates are required to bring to the Oral Examination in this subject their Laboratory notebooks certified by their teachers as being the record of their Laboratory work carried out during the course.*

VI.—DAIRY MICROBIOLOGY.

GENERAL.—The bacteria, yeasts, and moulds which commonly occur in milk and dairy products; their form, classification (in the case of the bacteria—Topley and Wilson's), growth and reproduction. Factors which control rate of growth. Fermentations of importance in dairying; causal micro-organisms and conditions which influence activity.

MILK.—Microbiology of milk production; sources of contamination, their relative importance and organisms derived from them. Normal changes produced by micro-organisms in milk. Abnormal changes; ropiness, premature curdling, gas formation, bitter, yeasty and malty flavours and flavour of roots and feeding-stuffs; causal organisms and methods of prevention. Effects of straining, centrifuging, cooling, heating, condensing, drying, and preservatives on the microflora of milk. Bacteriology of pasteurised and sterilised milk; influence of quality of raw milk. Standards for graded milks.

MILK PRODUCTS.—Starters; their propagation and management. Ripening of cream; development of normal flavour. Microbiology of butter. Ripening of hard, soft, and blue-veined cheese; factors concerned and their control. Microbiology of condensed, dried, and fermented milks. Defects of dairy products, causal organisms and preventive measures; butter defects—rancidity, yeasty and cheesy flavours, coloured spots; cheese defects—gas formation, bitterness, slow acid development and excessive acidity, colour changes; defects of condensed milk—gas formation, "buttons," coagulation.

DISEASES.—Diseases which may be conveyed by milk; sources of infection. Bacteriology of tuberculosis, contagious abortion, mastitis and methods of detection. Immunity; vaccines. Disinfection.

WATER.—The importance of a pure water supply for the dairy and the herd. Bacteria commonly present in natural waters. Sources of contamination, the effect of pollution with sewage, water-borne disease.

LABORATORY WORK.—The microscope and its use. Staining (including Gram and Ziehl-Neelsen methods), and microscopic examination of micro-organisms. Methods of isolation and cultivation. Preparation of bile-salt broth, milk, milk agar, and Wilson's agar.

Methods for the examination of milk; plate method, post-pasteurisation count, coliform test, Breed's method and the methylene blue reduction, fermentation, acidity and catalase tests. Methods for tracing sources of contamination and of milk faults. Detection of thermophilic, thermoduric, and pathogenic organisms in milk. Examination of water supplies.

N.B.—*Candidates are required to bring to the Oral Examination in this subject their Laboratory notebooks certified by their teachers as being the record of their Laboratory work carried out during the course.*

VII.—DAIRY BOOK-KEEPING.

Reasons for keeping accounts on the farm and in the dairy factory.

General principles of double-entry book-keeping. Use of day-book, journal, ledger, cash-book, and petty-cash book. Preparation of profit and loss account, capital account, and balance-sheet. Adjustments necessary for the owner-occupier.

Analysis cash-book.

Valuations.—Basis of valuations for accounting purposes on the farm and in the dairy factory. Dates for stock-taking.

Methods of accounting suitable for dairy farms with varying systems of milk disposal.

Opening a bank account. Cheques, deposits, and overdrafts.

Assessment of the farmer for Income Tax purposes.

CERTIFICATES IN FORESTRY

In 1870 the Society instituted an Examination in Forestry, and granted First and Second-Class Certificates respectively to such students as attained a certain standard of proficiency in the following subjects. Candidates were required to possess a thorough acquaintance with the theory and practice of Forestry, and a general knowledge of the following branches of study, so far as these applied to Forestry: (*a*) the elements of Forest Botany and Forest Zoology: (*b*) the elements of Meteorology and Geology; (*c*) Forest Engineering; and (*d*) Arithmetic and Book-keeping.

Holders of the First-Class Certificate were entitled to become free Life Members of the Society.

In view of the institution of Examinations for Certificates and Diplomas in Forestry by the Royal Scottish Forestry Society, and by arrangement with that Society, the Board of Directors of the Highland and Agricultural Society of Scotland resolved in 1935 to cease holding further Examinations for the First and Second-Class Certificates, and that, in future, the granting of Certificates and Diplomas be left in the hands of the Royal Scottish Forestry Society.

The list of students who obtained the Highland and Agricultural Society's Certificates in Forestry prior to 1899 appears in the 'Transactions' for the year 1899. A further list of those obtaining Certificates between 1899 and 1935 inclusive appears in the 'Transactions' for the year 1935. The total number of Certificates granted since the commencement of the Examination in 1870 was as follows: First-Class, 43; Second-Class, 38.

VETERINARY CERTIFICATES AND MEDALS

The Society established a Veterinary Department in 1823, but by an arrangement made with the Royal College of Veterinary Surgeons, the Society's examination ceased in 1881. Holders of the Society's Veterinary Certificate are entitled to become members of the Royal College of Veterinary Surgeons on payment of certain fees, without being required to undergo any further examination. The number of students who passed for the Society's Certificate is 1183.

The Society gives annually a limited number of silver medals for Class competition to each of the two Veterinary Colleges in Scotland —the Royal (Dick) Veterinary College, Edinburgh, and the Glasgow Veterinary College, Glasgow.

CHEMICAL DEPARTMENT

Chemist to the Society—J. F. Tocher, D.Sc., LL.D., F.I.C.,
Crown Mansions, 41½ Union Street, Aberdeen.

The object of the Chemical Department is to promote the diffusion of a knowledge of Chemistry as applied to agriculture among the members of the Society, to carry out experiments for that purpose, to assist members who are engaged in making local experiments requiring the direction or services of a chemist, to direct members in regard to the use of manures and feeding-stuffs, to assist them to put the purchase of these substances under proper control, and in general to consider all matters coming under the Society's notice in connection with the Chemistry of Agriculture.

MEMBERS' PRIVILEGES IN RESPECT TO ANALYSES.

The Directors are anxious to take any steps in their power to expose the vendors of inferior fertilisers and feeding-stuffs, and the members can give them assistance in this by supplying to the Chemist, when sending samples for analysis, information as to the guarantee, if any, on which the goods were sold, and also as to the price charged.

These charges apply only to analyses made for agricultural purposes, and for the sole and private use of members of the Highland and Agricultural Society who are not engaged in the manufacture or sale of the substances analysed.

Valuations of manures, according to the Society's scale of units, will be supplied if requested.

The Society will not be liable for payment of fees in respect of analyses for any member in excess of £5 for any one year, or £10 for any five consecutive years.

The undernoted fees are those payable by a member. These amounts represent only one-third of the total fee for any particular analysis, the other two-thirds being paid by the Society.

This scale does not apply to members whose subscriptions are in arrears.

Fertilisers and Feeding-Stuffs.

(1) The determination of one ingredient in a single sample of a *manure* or of a *feeding-stuff*	3/6
(2) The determination of two ingredients in a single sample of a *manure* or of a *feeding-stuff*	5/-
(3) The complete analysis of a sample of a *manure* or of a *feeding-stuff*	10/-

For example—

For one ingredient only.

Linseed and other cakes, for oil *or* for albuminoids	3/6
Feeding meals, ground cereals, for oil *or* for albuminoids	
Bone meals, for nitrogen *or* for total phosphate	
Compound manures, for nitrogen *or* for soluble phosphate *or* for insoluble phosphate *or* for potash	
Superphosphate, for soluble phosphate *or* for insoluble phosphate	
Ground mineral phosphate, for insoluble phosphate *or* for citric soluble phosphate	
Slag phosphate, for insoluble phosphate *or* for citric soluble phosphate	

For two ingredients only.

Any two ingredients of a manure or of a feeding-stuff	5/-

For a complete analysis.

For manures, the proportions of nitrogen (nitrogen included as nitrates or as ammonia compounds), soluble phosphate, insoluble phosphate, potash;	10/-
For feeding-stuffs, the proportions of oil, albuminoids, carbohydrates, iodine, mineral matter, fibre and moisture	

(4)	Ground Limestone, for carbonic acid and calcium, two determinations	5/-
(5)	Ground Lime, for percentage of calcium oxide	3/6

AGRICULTURAL PRODUCTS.

(6)	Turnips, sugar beet, for total sugar	5/-
(7)	Turnips, sugar beet, for oil, albuminoids, sugar, mineral matter, fibre and moisture	10/-
(8)	Grass, hay, ensilage, grain, &c., for oil, albuminoids, carbohydrates, mineral matter, fibre and moisture	10/-
(9)	Grain, for carbohydrates and moisture	5/-

MILK AND MILK PRODUCTS.

(10)	*Milk,* fresh, for butter fat only, by Gerber process	1/-
(11)	*Milk,* fresh, for butter fat, by Gerber, and solids not fat	2/6
(12)	*Milk,* sour sample, for butter fat, and solids not fat. Soxhlet extraction and Government Laboratory method for sour sample	5/-
(13)	*Milk,* for preservatives, borates, sulphur dioxide, hydrogen peroxide, formalin	5/-
(14)	*Butter,* for true butter fat and moisture (Reichert), for genuineness	5/-
(15)	*Butter,* for true butter fat (Reichert), moisture, foreign fat, preservatives	7/6

Water and Liquid Substances.

Cases containing bottles for water samples and instructions for sampling are sent from the laboratory on application.

(16)	Supply of water at farm, for total solids, free ammonia, albuminoid ammonia, nitrites, nitrates, hardness, for fitness for domestic use or potability . .	12/6
(17)	Supply of water at farm, for potability as above, and for proportions of mineral constituents, lead, copper, acidity pH value, action of water on lead (plumbo solvency), action of water on copper .	£1
(18)	Farm-yard manure, liquid manure, for nitrogen, potash, phosphates, and proportion of other mineral substances	£1

Miscellaneous.

(19)	Feeding oils and fats, for composition and quality .	10/-
(20)	Search for proportion of arsenic in feeding-stuff . .	10/-
(21)	Search for proportion of lead in feeding-stuff . .	10/-
(22)	Search for arsenic or any one poison in feeding-stuff .	10/-
(23)	Search for proportion of any one poison in viscera .	10/-
(24)	Search for poisons in food or in viscera, and proportion of poison found	£1 10/-

(*Veterinary surgeons are not entitled to have searches made for poisons in food or viscera under the Society's scheme for clients who are not members of the Society.*)

(25)	Proportion of arsenic in sheep dips or insecticides .	10/-
(26)	Proportion of carbolic acid in sheep dips or insecticides	5/-
(27)	Proportion of tar acids in sheep dips or insecticides .	10/-
(28)	Insecticides, foot rot pastes and other agricultural remedies for live stock and farm produce . .	£1

Samples should be sent (carriage paid) to Dr J. F. Tocher, *Crown Mansions,* 41½ *Union Street, Aberdeen.*

INSTRUCTIONS FOR SELECTING SAMPLES FOR ANALYSIS.

Manures.

Any method of sampling mutually agreed upon between buyer and seller may be adopted, but the following method is recommended as a very complete and satisfactory one: Four or more bags should be selected for sampling. Each bag is to be emptied out separately on a clean floor, worked through with the spade, and one spadeful taken out and set aside. The four or more spadefuls thus set aside are to be mixed together until a uniform mixture is obtained. Of this mixture one spadeful is to be taken, spread on paper, and still more thoroughly mixed, any lumps which it may contain being broken down with the hand. Of this mixture two samples of about half a pound each should be taken by the purchaser or his agent, in the presence of the seller or his agent or two witnesses (due notice having been given to the seller of the time and place of sampling), and these samples should be taken as quickly as possible, and put into bottles or tin cases to prevent loss of moisture, and having been labelled, should be sealed by the samplers—one or more samples to be retained by the purchaser, and one to be sent to the Chemist for analysis.

FEEDING-STUFFS.

Samples of feeding-stuffs which are in the form of meal may be taken in a similar manner to that mentioned above.

Samples of cake should be taken by selecting four or more cakes from the bulk. These should be nutted to a size not larger than walnuts. The nutted cake should then be thoroughly mixed and samples of not less than one pound each taken from it. The samples should be put into bottles or tins, sealed up, and labelled. One sample should be sent to the Chemist, and one or more duplicates retained by the purchaser.

VEGETABLE PRODUCTS.

Turnips, &c., at least 50 bulbs carefully selected as of fair average growth.

Hay, straw, ensilage, &c., should be sampled from a thin section cut across the whole stack or silo, and carefully mixed; above 2 lb. weight is required for analysis.

Grain should be sampled like manures.

Grass should be representative of the whole field; about 5 lb. weight is required for analysis.

DAIRY PRODUCE.

Milk.—Samples of milk from individual cows should be taken direct from the milk-pail after complete milking. Average samples from a number of cows should be taken immediately after milking. Specify whether the sample is morning or evening milk, or a mixture of these. Samples to be tested for adulteration should not be drawn from the bottom or taken from the top of standing milk, but they should be ladled from the vessel after the milk has been thoroughly mixed. Samples of milk should be sent immediately to the Chemist.

For most purposes a half-pint bottle of milk is a large enough sample.

Butter.—About quarter-pound samples are required.

WATERS.

When the water is from a well, it should be pumped for some minutes before taking the sample.

If the well has been standing unused for a long time, it should be pumped for some hours, so that the water may be renewed as far as possible.

If the well has been newly dug or cleaned out, it should be pumped as dry as possible, daily, for a week before taking the sample.

Water from cisterns, tanks, ponds, &c., should be sampled by immersing the bottle entirely under the water, and holding it, neck upwards, some inches below the surface. *Water from the surface should not be allowed to enter the bottle.*

Spring or stream water should not be sampled in very wet weather, but when the water is in ordinary condition. Such waters should be sampled by immersing the bottle. If not deep enough for that purpose, a perfectly clean cup should be used for transferring the water to the bottle.

When the bottle has been filled the stopper should be rinsed in the water before replacing it.

Interference with or disturbance of wells or springs, or the ground in their immediate vicinity, must be carefully avoided during sampling, and for at least twenty-four hours before it.

After a sample has been taken, it should be sent to the Chemist as speedily as possible.

A description of the source and circumstances of the water should accompany the sample, as the interpretation of the analytical results depends to some extent on a knowledge of such particulars.

N.B.—Stone jars and old wine bottles are unsuitable for conveying samples. Winchester quarts chemically cleaned should be obtained from Dr J. F. TOCHER, Crown Mansions, 41½ Union Street, Aberdeen.

COMPOSITION AND CHARACTERISTICS OF MANURES AND FEEDING-STUFFS.

Note on Statutory Statements.

In the Fertilisers and Feeding Stuffs Act, 1926, are included certain schedules which give the definitions implied on the sale of fertilisers and feeding-stuffs under certain names and also the particulars to be contained in the statutory statement which has to be furnished to the purchaser in connection with the sale of a fertiliser or a feeding-stuff. Such statutory statements "shall have effect as a written warranty by the seller that the particulars contained in the statutory statement are correct."

The particulars required vary for different articles and the undernoted are given as examples. Full particulars can be found by reference to the schedules of the Act.

FERTILISERS.

Sulphate of ammonia . .	Amount of nitrogen and amount of free acid.
Superphosphate . . .	Amount of soluble phosphoric acid.
Potassium salts (potash fertilisers)	Amount of potash.
Compound fertilisers . .	Amounts of nitrogen, potash, soluble phosphoric acid, and insoluble phosphoric acid, if any, respectively.

FEEDING-STUFFS.

Linseed cakes and the meals of such cakes.	Amounts of oil and albuminoids.
Cotton cakes or meals (not decorticated).	Amounts of oil and albuminoids.
Cotton cakes or meals from decorticated or partly decorticated cotton seed.	Amounts of oil, albuminoids, and fibre.
Compound cakes or meals	Amounts, if any, of oil, albuminoids, and fibre.

PRICES OF FEEDING-STUFFS—SEASON 1939.

(Cash Prices as at 7th June. These prices are subject to variation from month to month or oftener.)

(*For Cash Prices as at* 1*st February* 1939, *see previous volume.*)

Name of Feeding-Stuff.	Price per Ton.
Linseed Cake (Home), 8% Oil, 28% Albuminoids	£8 12 6
Linseed Cake (Expeller)	8 12 6
Cotton Seed Cake (Egyptian) (undecorticated), Home, 4·5% Oil, 22% Albuminoids	5 12 6
Ground Nut Cake—	
Decorticated (Expeller), 8% Oil, 42% Albuminoids, 12% Fibre	7 5 0
Decorticated (Expeller), 8% Oil, 50% Albuminoids, 8% Fibre	7 7 6
Decorticated Cotton Seed Cake, (Expeller), 8% Oil, 40% Albuminoids (Glasgow)	7 10 0
Rice Bran Meal	5 7 6
Broad Bran	5 17 6
Medium Bran	5 2 6
Parings or Wheatings	5 15 0

Name of Feeding-Stuff.	Price per Ton.
Dried Distillery Grains { from	£5 5 0
Dried Distillery Grains { to	6 5 0
Dried Brewers' Grains	4 5 0
Feeding Treacle (Glasgow)	5 5 0
Locust Beans (Kibbled)*	6 12 6
Maize (Argentine)*	6 5 0
,, (Flaked)*	7 0 0
Soya Bean Meal (extracted)	9 5 0
Home Oats	6 0 0
Wheat (Home)	4 15 0
,, (Flaked)	6 0 0
Barley (Feeding) (Imported)	5 15 0
White Fish Meal (Aberdeen)	14 15 0
,, ,, (Leith)	15 2 6
,, ,, (Glasgow)	15 5 0
Ground Barley	6 10 0
Skim Milk Powder†	21 0 0
Whey Powder	17 0 0

Note—Prices free on rail, Leith, unless where otherwise stated.

* In Railway Sacks. † In two-ton lots delivered.

PRICES OF FERTILISERS AND FEEDING-STUFFS—SEASON 1940.

(Cash Prices as at 7th February. These prices are subject to variation from month to month or oftener.)

SUPERPHOSPHATES.

ITEM TO BE VALUED.	PRICES FOR THE UNDERNOTED PERCENTAGES.		
PHOSPHORIC ACID DISSOLVED =TRICALCIUM PHOSPHATE DISSOLVED	16·0 35	18·0 39·3	21·0 45·9
February Price per ton	£4 0 0	£4 5 0	£4 12 6
Price per Unit	5/0	4/8½	4/5

FERTILISERS.

(Other than Superphosphates.)

Name of Fertiliser.	Guarantee.	Price per Ton.	Price per Unit.
		£ s. d.	s. d.
Sulphate of Ammonia (neutral) * . .	20·6 % Nitrogen	9 3 0	8 10½
,, ,, (March-June)	,,	9 6 0	9 0½
Basic Slag †‡	12 % Total Phos. Acid =26·2 % Tric. Phos.	2 9 6	4 1½
,, ,, †‡	13 % Total Phos. Acid =28·4 % Tric. Phos.	2 10 8	3 10¾
Bone Meal (Indian) . . .	4 % Nit. 20 % Total Phos. Acid =43·7 % Tric. Phos.	9 0 0	N 20 0 T P A 5 0
Steamed Bone Flour . . .	1 % Nit. 30 % Total Phos. Acid =65·5 % Tric. Phos	6 10 0	N 15 3½ T P A 3 10
Ground Mineral Phosphate § . .	26 % Total Phos. Acid =56·8 % Tric. Phos.	3 16 3	2 11½
,, ,, ,, § . .	34 % Total Phos. Acid =74·25 % Tric. Phos.	4 16 3	2 10
Potassic Mineral Phosphate . .	4 % Pot. 22 % Total Phos. Acid =48 % Tric. Phos.	4 8 6	Pot. 4 5½ T P A 3 2½
Nitrate of Soda { at Glasgow at Leith } . .	16 % Nitrogen	8 2 6 8 10 0	10 2 10 7½
Nitro Chalk *	15·5 % ,,	8 18 0	11 5¼
Kainit	14 % Potash	4 2 6	5 10¾
Potash Salts	30 % ,,	6 0 0	4 0
Sulphate of Potash	48·5 % ,,	12 0 0	4 11½
Muriate of Potash	50 % ,,	9 5 0	3 8½
Concentrated Fertiliser ** . .	10·3 % Nitrogen 10·3 % Sol. P.A. 20·7 % Potash	12 18 0	N 8 2¼ S P A 5 4¾ Pot. 5 8¾

Ground Lime, in bags (65 % calcium oxide), at Dufftown, 40/- per ton; (60 % calcium oxide) at Grange, 42/4 per ton; (70 % calcium oxide) at Fushiebridge, 36/- per ton; (75 % calcium oxide) at Cults, 36/- per ton.

English Ground Lime (85 % calcium oxide), to Aberdeen, 54/- per ton; (90% calcium oxide) to Aberdeen, 57/- per ton.

English Ground Lime (95 % calcium oxide), at Buxton, f.o.r. 29/- per ton, in bags; or to Edinburgh, 52/3 per ton; to Lanark, 50/3 per ton; to Stirling, 54/9 per ton; to Dumfries, 48/- per ton.

Ground Limestone (96 % calcium carbonate), at Buxton, f.o.r. in bulk, 14/6 per ton; or to Edinburgh, 29/10 per ton; to Lanark, 29/3 per ton; to Stirling, 31/- per ton; to Dumfries, 27/10 per ton; in six-ton lots in bulk. 80 % passing through prescribed sieve.

The prices for all fertilisers are cash prices for two-ton lots in bags at Leith or Glasgow, unless otherwise stated. Where prices are quoted carriage paid, there is a reduction, in certain cases, of from 5/- to 10/- per ton when lifted Ex Sellers' stores.

* Carriage paid to any railway station in six-ton lots. Four-ton lots 1/- more per ton.

† Manufacturers' allowance as adjusted with the Land Fertility Committee—viz., 1/- per ton on all grades up to and including 12 %; over 12 % up to and including 15·75 %, 2/- per ton; over 15·75 %, 3/- per ton.

‡ The fineness is such that 80 % of the powder will pass through the prescribed sieve.

§ The fineness is such that 90 % of the powder will pass through the prescribed sieve.

** Price for 6 ton lots including cost of mixing, &c. Other similar Concentrated Fertilisers are available.

N.B.—When these units are multiplied by the percentages in the analysis of a Manure, they will produce a value representing very nearly the cash price *per ton at which TWO TONS may be bought in fine sowable condition at Leith or Glasgow. Larger purchases may be made on more favourable terms.*

FEEDING-STUFFS.

Name of Feeding-Stuff.	Price per Ton. £	s.	d.	Name of Feeding-Stuff.	Price per Ton. £	s.	d.
Linseed Cake (Home), 8% Oil, 28% Albuminoids	10	12	6	Dried Grains * . . From	6	12	6
Linseed Cake (Expeller), 9% Oil, 30% Albuminoids	10	12	6	To	8	2	6
Cotton Seed Cake (Egyptian) (undecorticated), 4·5% Oil, 22% Albuminoids	6	12	6	Feeding Treacle †	7	10	9
Decorticated Cotton Seed Cake, 48-50% Oil and Albuminoids	9	7	6	Locust Beans (Kibbled) ‡	9	7	6
Ground Nut Cake—				Maize §	8	0	0
Decorticated (Expeller), 48-50% Oil and Albuminoids	8	15	0	,, (Flaked) ‡	10	10	0
Decorticated (Expeller), 54% Oil and Albuminoids	9	0	0	Wheat (Imported)	7	4	1
Rice Bran Meal	6	12	6	Beans ,,	10	0	0
White Bran, straight run	8	5	0	Bean Meal	11	15	0
Red Bran, ,, ,,	7	5	0	Soya Bean Meal (extracted)	11	12	6
Fine Wheat Feed	7	5	0	Home Oats (Feeding)	11	0	0
				White Fish Meal, 6% Oil, 64% Albuminoids (at Aberdeen)	23	10	0
				Ground Barley	9	15	0
				Barley (Imported)	8	0	0
				Skim Milk Powder ‖	27	0	0
				Whey Powder ‖	22	0	0

* Bags extra. † In lots under 1 ton in barrels. ‡ Including Bags.

§ In Railway Sacks. ‖ In two-ton lots delivered.

CLASSIFICATION OF MANURES.

BONE MEALS	Genuine Bone Meal contains about 20 per cent Phosphoric Acid equal to 43·7 per cent Tricalcium Phosphate, and about 4 per cent Nitrogen. If Phosphates are low, Nitrogen will be high, and conversely.
STEAMED BONE FLOUR	Ground to flour, and containing 30 per cent Phosphoric Acid equal to about 65 per cent Phosphates and about 1 per cent Nitrogen.
MIXTURES AND COMPOUND MANURES	To be valued according to the following units: Nitrogen, 7/6; Soluble Phosphoric Acid, 4/10½; Insoluble Phosphoric Acid, 3/4; and Potash, 4/5 (from muriate); 5/3 (from sulphate). The value so arrived at will be the value at Leith or Glasgow, exclusive of the cost of mixing, bags and bagging, which may be taken on an average at about 20/6 per ton.
DISSOLVED BONES	Must be pure—*i.e.*, containing nothing but natural bones and Sulphuric Acid.

INSTRUCTIONS FOR VALUING MANURES.

The unit used for the valuation of manures is the hundredth part of a ton, and as the results of analyses of manures are expressed in parts per hundred, the percentage of any ingredient of a manure when multiplied by the price of the unit of that ingredient represents the value of the quantity of it contained in a ton.

As an example take muriate of potash; a good sample (see p. 54) will be guaranteed to contain 50 per cent of oxide of potash. All potash manures are valued according to the amount of potash (oxide of potash) they yield, and muriate of potash yields 50 per cent of potash (K_2O)—*i.e.*, 50 units per ton; and as a ton of muriate of potash costs £9, 5s., the price of the unit is the fiftieth part of that—viz., 3/8½. If on analysis a sample of muriate of potash guaranteed to contain 50 per cent of potash is found to contain only 47 per cent, the price per ton will be 11/1 (three times 3/8½) less—viz., £8, 13s. 11d.

Similarly with all other manures, the price per unit is derived from the price per ton of a sample of good material up to its guarantee, and therefore the proper price per ton of a manure is found by multiplying the price of the unit of the valuable ingredient by the percentage as found by analysis. If a manure contains more than one valuable ingredient, the unit value of each ingredient is multiplied by its percentage, and the values so found when added together give approximately the price per ton of the manure.

Nitrate of soda contains no ammonia, but it contains nitrogen, and 14 units of nitrogen are equivalent to 17 units of ammonia.

The commercial values of manures are determined by means of the Units in the following manner:—

Take the results of analysis of the manure, and look for the following substances:—

Phosphates dissolved (or soluble phosphoric acid) Phosphates undissolved (or insoluble phosphoric acid) Total phosphoric acid Nitrogen Potash	No other items but these are to be valued.

Should the results of analysis or the guarantee not be expressed in that way, the chemist or the seller should be asked to state the quantities in these terms.

Suppose the manure is ground mineral phosphate—

The proportion of phosphate present in a sample guaranteed to contain 26 per cent phosphoric acid may be 24 per cent phosphoric acid. The price per unit of phosphoric acid in ground mineral phosphate (26 per cent grade) is 2s. 11¼d. The value of ground mineral phosphate containing 24 per cent phosphoric acid is therefore 24 times 2s. 11¼d., equal to £3, 10s. 6d.

Suppose the manure is a superphosphate—say an ordinary superphosphate, 17 per cent soluble phosphoric acid,—the price per unit of phosphoric acid in superphosphate (18 per cent grade) is 4/8¾.

It is valued thus—

Soluble phosphoric acid. 17 times 4/8¾, equal to £4, 0s. 5d.

Insoluble phosphoric acid is not valued in a superphosphate.

Suppose the manure is a compound fertiliser containing 4 per cent nitrogen, 7 per cent soluble phosphoric acid, 3 per cent insoluble phosphoric acid, and 4 per cent potash. From the units given on p. 55 for "Mixtures and Compound Manures," the value of this compound fertiliser is obtained as follows:—

The value of the—

Nitrogen will be	£1	10	0	per ton
Soluble phosphoric acid will be . .	1	14	1	"
Insoluble phosphoric acid will be .	0	10	0	"
Potash will be	0	17	8	"
	£4	11	9	

The value of this manure will thus be £4, 11s. 9d. per ton, exclusive of the cost of mixing, bags and bagging, which may be taken on an average at about 20/6 per ton. It will be seen that the potash is valued on the assumption that it is derived from muriate.

Note.—The units have reference solely to the MARKET PRICES of MANURES, and not to their AGRICULTURAL VALUES.

TABLE OF COMPENSATION VALUES FOR 1940.

TABLE SHOWING THE VALUE OF FEEDING-STUFFS AS MANURE PER TON, AND THE COMPENSATION VALUE PER TON OF FOOD CONSUMED, BASED ON THE AVERAGE UNIT PRICES OF FERTILISERS FOR 1940.

The following is a Table showing (under Section A) the average proportions of nitrogen, phosphoric acid, and potash present in the feeding-stuffs named. The Table also shows the value per unit of nitrogen, phosphoric acid, and potash, the prices per unit being the value per unit for compound manures prevailing for 1940. The residual value of nitrogen is again based on the total nitrogen content of the feeding-stuffs instead of being divided into digested and undigested nitrogen. Under Section B of the Table is shown the compensation value per ton of food consumed for each of the feeding-stuffs named, based on the unit prices for 1940. Column (1) of Section B of the Table shows the value per ton recovered in dung; while the remaining two columns show the residual values per ton after one crop and two crops have been removed.

The residual value, after one crop has been removed, is taken as one-half of the original residual value. Residual values are reduced by one-half after each crop.

Foods.	Nitrogen.				
	Per cent in food. (1)	Value at 9s. 6d. per unit. (2)		Two-fifths value to manure. (3)	
		s.	d.	s.	d.
Cotton-cake, decorticated	6·90	65	7	26	3
Cotton-cake, undecorticated	3·54	33	8	13	6
Linseed-cake	4·75	45	2	18	1
Linseed	3·60	34	2	13	8
Soya-bean cake	6·85	65	1	26	0
Palm-nut cake	2·50	23	9	9	6
Cocoa-nut cake	3·40	32	4	12	11
Earth-nut cake	7·62	72	5	29	0
Rape cake	4·90	46	7	18	8
Beans	4·00	38	0	15	2
Peas	3·60	34	2	13	8
Wheat	1·80	17	1	6	10
Barley	1·65	15	8	6	3
Oats	2·00	19	0	7	7
Maize	1·70	16	2	6	6
Rice-meal	1·90	18	1	7	3
Locust beans	1·20	11	5	4	7
Malt	1·70	16	2	6	6
Malt culms	3·90	37	1	14	10
Bran	2·50	23	9	9	6
Brewers' and distillers' grains (dried)	3·30	31	4	12	6
Brewers' and distillers' grains (wet)	0·81	7	8	3	1
Dried distillery dreg	5·31	50	5	20	2
Clover hay	2·24	21	3	8	6
Meadow hay	1·50	14	3	5	8
Wheat straw	0·45	4	3	1	8
Barley straw	0·40	3	10	1	6
Oat straw	0·50	4	9	1	11
Mangolds	0·22	2	1	0	10
Swedes	0·25	2	5	1	0
Turnips	0·18	1	9	0	8
Fish-meal	8·98	85	4	34	2

The figures in column (10) are the

A. Value per ton as Manure.										B. Compensation Value per ton of Food consumed.					
Phosphoric Acid.					Potash.					(1) Value re-covered in dung.		Residual Value after			
Per cent in food. (4)	Value at 5s.4d. per unit. (5)		Three-fourths value to manure. (6)		Per cent in food. (7)	Value at 4s.6d. per unit. (8)		Three-fourths value to manure. (9)		(10)		(2) One crop. (11)		(3) Two crops. (12)	
	s.	d.	s.	d.		s.	d.	s.	d.	s.	d.	s.	d	s.	d.
3·10	16	6	12	5	2·00	9	0	6	9	45	5	22	9	11	4
2·00	10	8	8	0	2·00	9	0	6	9	28	3	14	2	7	1
2·00	10	8	8	0	1·40	6	4	4	9	30	10	15	5	7	8
1·54	8	3	6	2	1·37	6	2	4	8	24	6	12	3	6	2
1·30	6	11	5	2	2·20	9	11	7	5	38	7	19	4	9	8
1·20	6	5	4	10	0·50	2	3	1	8	16	0	8	0	4	0
1·40	7	6	5	8	2·00	9	0	6	9	25	4	12	8	6	4
2·00	10	8	8	0	1·50	6	9	5	1	42	1	21	1	10	6
2·50	13	4	10	0	1·50	6	9	5	1	33	9	16	11	8	5
1·10	5	10	4	5	1·30	5	10	4	5	24	0	12	0	6	0
0·85	4	6	3	5	0·96	4	4	3	3	20	4	10	2	5	1
0·85	4	6	3	5	0·53	2	5	1	10	12	1	6	1	3	0
0·75	4	0	3	0	0·55	2	6	1	11	11	2	5	7	2	10
0·60	3	2	2	5	0·50	2	3	1	8	11	8	5	10	2	11
0·60	3	2	2	5	0·37	1	8	1	3	10	2	5	1	2	7
0·60	3	2	2	5	0·37	1	8	1	3	10	11	5	6	2	9
0·80	4	3	3	2	0·80	3	7	2	8	10	5	5	3	2	7
0·80	4	3	3	2	0·60	2	8	2	0	11	8	5	10	2	11
2·00	10	8	8	0	2·00	9	0	6	9	29	7	14	10	7	5
2·70	14	5	10	10	1·45	6	6	4	11	25	3	12	8	6	4
1·61	8	7	6	5	0·20	0	11	0	8	19	7	9	10	4	11
0·42	2	3	1	8	0·05	0	3	0	2	4	11	2	6	1	3
0·44	2	4	1	9	0·22	1	0	0	9	22	8	11	4	5	8
0·57	3	0	2	3	1·50	6	9	5	1	15	10	7	11	4	0
0·40	2	2	1	8	1·60	7	2	5	5	12	9	6	5	3	2
0·24	1	3	0	11	0·80	3	7	2	8	5	3	2	8	1	4
0·18	1	0	0	9	1·00	4	6	3	5	5	8	2	10	1	5
0·24	1	3	0	11	1·00	4	6	3	5	6	3	3	2	1	7
0·07	0	4	0	3	0·40	1	10	1	5	2	6	1	3	0	8
0·06	0	4	0	3	0·22	1	0	0	9	2	0	1	0	0	6
0·05	0	3	0	2	0·30	1	4	1	0	1	10	0	11	0	6
7·24	38	7	28	11	0·50	2	3	1	8	64	9	32	5	16	2

sum of columns (3), (6), and (9).

BOTANICAL DEPARTMENT

Consulting Botanist to the Society—(vacant).

The Society has fixed the following scale of charges for the examination of plants and seeds for the *bona fide* and individual use and information of members of the Society (not being seedsmen), who are particularly requested, when applying to the Consulting Botanist, to mention the kind of examination required, and to quote its number as appearing in the undernoted Scale of Charges. The charge for examination must be paid at the time of application, and the carriage or postage on all parcels must be prepaid.

Scale of Charges for Examinations.

1. A report on the purity, amount, and nature of foreign materials, and the germinating power of a sample of seed . . 1s.
2. Determination of the species of any weed or other plant, or of any vegetable parasite, with a report on its habits and the means for its extermination or prevention . . . 1s.
3. Report on any disease affecting farm crops . . . 1s.
4. Determination of the species of any natural grass or fodder plant, with a report on its habits and pasture or feeding value . . . . 1s.

The Consulting Botanist's Reports are furnished to enable members—purchasers of seeds and corn for agricultural or horticultural purposes—to test the value of what they buy, and are not to be used or made available for advertising or trade purposes by seedsmen or otherwise.

Purchase of Seeds.

The purchaser should obtain from the vendor, by invoice or other writing, the proper designation of the seeds bought, with a guarantee of the percentage of purity and germination, and of its freedom from ergot, and in the case of clover, from the seeds of dodder or broom-rape.

It is strongly recommended that the purchase of *prepared mixtures* of seeds should be avoided. The different seeds should be purchased separately and mixed by the farmer: mixtures cannot be tested for germination.

The Sampling of Seeds.

The utmost care should be taken to secure a fair and honest sample. This should be drawn from the bulk delivered to the purchaser, and not from the sample sent by the vendor.

When legal evidence is required, the sample should be taken from the bulk, and placed in a sealed bag in the presence of a witness. Care should be taken that the sample and bulk be not tampered with after delivery, or mixed or brought in contact with any other sample or bulk.

At least one ounce of grass and other small seeds should be sent, and two ounces of cereals and the larger seeds. When the bulk is obviously impure the sample should be at least double the amount specified. Grass seeds should be sent at least four weeks, and seeds of clover and cereals two weeks, before they are to be used.

The exact name under which the sample has been sold and purchased should accompany it.

Reporting the Results.

The Report will be made on a schedule in which the nature and amount of impurities will be stated, and the number of days each sample has been under test, with the percentage of the seeds which have germinated.

"Hard" clover seeds, though not germinating within the time stated, will be considered good seeds, and their percentage separately stated.

The impurities in the sample, including the chaff of the species tested, will be specified in the schedule, and only the percentage of the pure seed of that species will be reported upon; but the REAL VALUE of the sample will be stated. The Real Value is the combined percentages of purity and germination, and is obtained by multiplying these percentages and dividing by 100: thus in a sample of Meadow Fescue having 88 per cent purity and 95 per cent germination, 88 multiplied by 95 gives 8360, and this divided by 100 gives 83·6, the Real Value.

Selecting Specimens of Plants.

The whole plant should be taken up and the earth shaken from the roots. If possible the plants should be in flower or fruit. They must be packed in a light box, or in a firm paper parcel.

Specimens of diseased plants or of parasites should be forwarded as fresh as possible. They must be placed in a bottle, or packed in tinfoil or oil-silk.

All specimens should be accompanied with a letter specifying the nature of the information required, and stating any local circumstances (soil, situation, &c.) which, in the opinion of the sender, would be likely to throw light on the inquiry.

NOTE.—Members are reminded that Seeds may now be tested at the Department of Agriculture for Scotland Seed-testing Station. Samples should be addressed to T. Anderson, Esq., Seed-testing Station, East Craigs, Corstorphine, Edinburgh.

ENTOMOLOGICAL DEPARTMENT

Consulting Zoologist to the Society—A. E. Cameron, M.A., D.Sc., Department of Agricultural and Forest Zoology, University of Edinburgh, 10 George Square, Edinburgh.

REPORTS ON THE ANIMAL ENEMIES OF CROP PLANTS AND LIVE STOCK (INCLUDING POULTRY).

The Consulting Zoologist is prepared to send to any Member of the Society a Report on damage to, or diseases of, plants and animals due to animal agency (Insects, Mites, Worms, Snails, Slugs, Birds, and the Smaller Mammals), and will advise Members regarding insects or allied animals which, in any stage of their development, infest—

(*a*) Farm crops.
(*b*) Stored grain and foodstuffs.
(*c*) Garden and greenhouse plants.
(*d*) Fruit and fruit trees.
(*e*) Forest trees and stored timber.
(*f*) Live stock (including poultry).

Any Member consulting Dr Cameron should give him full particulars of the damage or disease upon which his advice is desired. In addition, there should be sent to him specimens of the injured plants, or the injured parts of plants, &c., as well as specimens of the insects or animals believed to be the cause of the injury.

Specimens should be sent in tin or wooden boxes, or in quills, in order to prevent injury in transmission.

The Directors have fixed the fee payable by Members to Dr Cameron at 2s. 6d. for each case upon which he is consulted : this fee should be sent to him along with the application for information.

Letters and parcels (carriage or postage paid) should be addressed to A. E. Cameron, Esq., M.A., D.Sc., Department of Agricultural and Forest Zoology, University of Edinburgh, 10 George Square, Edinburgh.

PREMIUMS OFFERED

1940

GROUP I.—REPORTS.

GENERAL REGULATIONS.

1. It is to be distinctly understood that the Society is not responsible for the views, statements, or opinions of any of the writers whose papers are published in the 'Transactions.'

2. All reports must be legibly written, and on one side of the paper only; they must specify the number and subject of the Premium for which they are in competition; they must bear a distinguishing motto, and be accompanied by a sealed letter, similarly marked, containing the name and address of the reporter—initials must not be used.

3. No sealed letter, unless belonging to a report found entitled to the Premium offered, or a portion of it, will be opened without the author's consent.

4. Reports for which a Premium, or a portion of a Premium, has been awarded, become the property of the Society, and cannot be published in whole or in part, or circulated in any manner, without the consent of the Directors. All other papers will be returned to the authors if applied for within twelve months.

5. The Society is not bound to award the whole or any part of a Premium.

6. All reports must be of a practical character, containing the results of the writer's own observation or experiment, and the special conditions attached to each Premium must be strictly fulfilled. General essays, and papers compiled from books, will not be rewarded or accepted. Weights and measurements must be indicated by the imperial standards.

7. The Directors, before or after awarding a Premium, shall have power to require the writer of any report to verify the statements made in it.

8. The decisions of the Board of Directors are final and conclusive as to all matters relating to Premiums, whether for Reports or at General or District Shows; and it shall not be competent to raise any question or appeal touching such decisions before any other tribunal.

9. The Directors will welcome papers from any Contributor on any suitable subject, whether included in the Premium List or not; and if the topic and the treatment of it are both approved, the writer may be remunerated and his paper published.

SECTION 1.—THE SCIENCE AND PRACTICE OF AGRICULTURE.

FOR APPROVED REPORTS.

1. On any useful practice in Rural Economy adopted in other countries, and susceptible of being introduced with advantage into Scotland—The Gold Medal. To be lodged by 1st November in any year.

The purpose chiefly contemplated by the offer of this premium is to induce travellers to notice and record such particular practices as may seem calculated to benefit Scotland. The Report to be founded on personal observation.

2. Approved Reports on other suitable subjects. To be lodged by 1st November in any year.

SECTION 2.—ESTATE IMPROVEMENTS.

FOR APPROVED REPORTS.

1. By the Proprietor in Scotland who shall have executed the most judicious, successful, and extensive Improvement—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

Should the successful Report be written for the Proprietor by his resident factor or farm manager, a Minor Gold Medal will be awarded to the writer in addition to the Gold Medal to the Proprietor.

The merits of the Report will not be determined so much by the mere extent of the improvements, as by their character and relation to the size of the property. The improvements may comprise reclaiming, draining, enclosing, planting, road-making, building, and all other operations proper to landed estates. The period within which the operations may have been conducted is not limited, except that it must not exceed the term of the Reporter's proprietorship.

2. By the Proprietor or Tenant in Scotland who shall have reclaimed within the ten preceding years not less than forty

acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

3. By the Tenant in Scotland who shall have reclaimed within the ten preceding years not less than twenty acres of Waste Land—The Gold Medal, or Ten Pounds. To be lodged by 1st November in any year.

4. By the Tenant in Scotland who shall have reclaimed not less than ten acres within a similar period—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The Reports in competition for Nos. 2, 3, and 4 may comprehend such general observations on the improvement of waste lands as the writer's experience may lead him to make, but must refer especially to the lands reclaimed—to the nature of the soil—the previous state and probable value of the subject—the obstacles opposed to its improvement—the details of the various operations—the mode of cultivation adopted—and the produce and value of the crops produced. As the required extent cannot be made up of different patches of land, the improvement must have relation to one subject; it must be of profitable character, and a rotation of crops must have been concluded before the date of the Report. *A detailed statement of the expenditure and return* and a certified measurement of the ground are requisite.

5. By the Proprietor or Tenant in Scotland who shall have improved within the ten preceding years the Pasturage of not less than thirty acres, by means of top-dressing, draining, or otherwise, without tillage, in situations where tillage may be inexpedient—The Gold Medal, or Ten pounds. To be lodged by 1st November in any year.

6. By the Tenant in Scotland who shall have improved not less than ten acres within a similar period—The Minor Gold Medal. To be lodged by 1st November in any year.

Reports in competition for Nos. 5 and 6 must state the particular mode of management adopted, the substances applied, the elevation and nature of the soil, its previous natural products, and the changes produced.

SECTION 3.—HIGHLAND INDUSTRIES.

FOR APPROVED REPORTS.

1. The best mode of treating native Wool; cleaning, carding, dyeing, spinning, knitting, and weaving by hand in the Highlands and Islands of Scotland—Five Pounds. To be lodged by 1st November in any year.

SECTION 4.—MACHINERY.

FOR APPROVED REPORTS.

To be lodged by 1st November in any year.

SECTION 5.—FORESTRY.

FOR APPROVED REPORTS.

1. On Plantations of not less than eight years' standing formed on deep peat-bog—The Medium Gold Medal, or Five Pounds. To be lodged by 1st November in any year.

The Premium is strictly applicable to deep peat or flow moss; the condition of the moss previous to planting, as well as at the date of the Report, should, if possible, be stated.

The Report must describe the mode and extent of the drainage, and the effect it has had in subsiding the moss—the trenching, levelling, or other preliminary operations that may have been performed on the surface—the mode of planting—kinds, sizes, and number of trees planted per acre—and their relative progress and value, as compared with plantations of a similar age and description grown on other soils in the vicinity.

GROUP II.—DISTRICT GRANTS.

APPLICATIONS.

Forms of Application may be obtained from the Secretary, 8 Eglinton Crescent, Edinburgh 12, which should be completed and returned on or before ***1st November 1940,*** in respect of a Grant commencing in the following year.

Renewal of Grant.—Applications for **renewal** of a particular Grant will be entertained only after the lapse of a specified interval of years (as undernoted) from the termination of the previous Grant, without prejudice, however, to the competency of applying in such intermediate years for a Grant in any other class.

Class.	Interval
1. Grants of £12 for Show Premiums for Horses, Cattle, Sheep, and Pigs	4 years.
2. Grants of £15 in respect of Stallions engaged for Agricultural purposes	3 years.
3. Grants of Silver Medals in aid of Premiums	2 years.
4. Special Grants	—
5. Grants of £10 to Federations of S.W.R.I. for Show or Exhibition Prizes	2 years.

CLASS 1.

LOCAL AGRICULTURAL SOCIETIES—GRANTS OF £12 FOR SHOW PREMIUMS FOR HORSES, CATTLE, SHEEP, AND PIGS.

Regulations, 1940.

1. Class of Stock—Limit of Grants, £340.—The Highland and Agricultural Society will make Grants to Local Societies for prizes for *Breeding Animals* in any of the following Classes of Stock, viz.:—

Cattle.

Shorthorn.
Aberdeen-Angus.
Galloway.
Belted Galloway.
Highland.
Ayrshire.
British Friesian.
Red Poll.
Jersey.
Shetland.

Pigs.

Any Pure Breed.

Horses.

Draught Horses.
Hunters.
Hackneys.
Ponies.
Shetland Ponies.

Sheep.

Blackface.
Cheviot.
Border Leicester.
Half-Bred.
Shropshire.
Oxford Down.
Suffolk.
Wensleydale.

Cross-bred[1] animals are not eligible. The Prizes must be confined to *Breeding* Animals; "bullocks," "geldings," "wethers," and "hog pigs" are excluded.

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[1] *Exceptions to this rule may, however, be authorised by the Board of Directors, on application. The Directors are prepared to consider applications from Local Societies which desire to use their Grants, or part thereof, as prizes for cross-bred calves and one-year-old cross-bred cattle.*

2. All Competitions must be at the instance of a Local Society. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society must be a Member of the Highland and Agricultural Society of Scotland.

3. GRANT TO SOCIETY, £12.—The portion of the Grant to any one Local Society shall not exceed the sum of £12 in any one year.

4. ALLOCATION OF GRANT.—The Grant from the Highland and Agricultural Society shall not be applied as a Grant in aid of the Premiums offered by the Local Society, but must be offered in the form of separate Prizes for the Animals chosen; **and the offer of the Prizes must be announced in the Premium List and Catalogue of the Show as "presented by the Highland and Agricultural Society of Scotland."**

5. CONTINUANCE OF GRANT—THREE YEARS.—The Money Grant shall continue for three alternate years, provided always that the Local Society shall, in the two intermediate years, continue the competition by offering Premiums for the same class of Stock as that selected in each previous year to compete for the Highland and Agricultural Society's Prizes.

If no competition takes place for two consecutive years the Grant expires.

6. MEDALS IN INTERMEDIATE YEARS.—In the two intermediate years the Highland and Agricultural Society will place three Silver Medals at the disposal of each Local Society, for the same classes of Stock as those for which the Money Premiums are offered, provided that not less than three lots are exhibited in the same class.

7. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no Local Society may hold a Show within that Division in the **three months immediately preceding** the date of the General Show. **In the event of a Show being held, the entire Grant to the Local Society will be cancelled.**

8. RULES OF COMPETITION.—The Rules of Competition for the Premiums, the funds for which are derived from Grants of the Highland and Agricultural Society, shall be such as are generally enforced by the Local Society in the case of Premiums offered from its own funds.

9. AREA AND PARISHES—FIVE PARISHES.—When making application for Grants from the Highland and Agricultural Society, the Local Society must delineate the area and the number of parishes comprised in the district, and, *except in special cases*, no Local Society shall be entitled to a Grant whose Show is not open to at least *five* Parishes.

10. REPORTS.—Forms of Report will be furnished to the Secretaries of Local Societies. Detailed reports of the competitions for the Society's Premiums must be given and the completed Reports, duly signed and certified, must be lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Show, and in no case later than 1st November. These Reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. **The Grant will lapse if no Report is lodged by the due date.**

11. GRANTS—WHEN PAID.—The Grants made to Local Societies will be paid in December after the Reports of the awards of the prizes have been received and found to be in order and passed by

the Board of Directors, the Money Grants being paid to the Secretaries of the Local Societies and the Medals sent direct to the winners. ***The Secretary of the Local Society must not on any condition whatever pay any Premium offered by the Highland and Agricultural Society until he has been informed that the awards are in order and has received the Grant from the Highland and Agricultural Society.***

12. RENEWAL OF GRANT. — No application for renewal of a Grant to a Local Society will be entertained until after the expiry of *four years* from the termination of the last Grant.

13. DISPOSAL OF APPLICATIONS.—In disposing of applications for District Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those Local Societies which have been longest off the list.

Grants in 1940.

5th and Final Year—**GRANT OF £12.**

1. BOTHWELL FARMERS' SOCIETY.
Convener—James Russell, Townhead Farm, Holytown, Lanarkshire.
Secretary—J. S. Paterson, Storetta, Jerviston Road, Motherwell.
Granted 1935. (Grant in abeyance 1939).

2. BUTE AGRICULTURAL SOCIETY.
Convener—Peter M'Kirdy, Dunagoil Farm, Isle of Bute.
Secretary—James M. Matheson, Sheriff-Clerk's Office, County Buildings, Rothesay.
Granted 1936.

3. DALSERF FARMERS' SOCIETY.
Convener—John Fleming, Marrshill, Draffan, Kirkmuirhill, Lanarkshire.
Secretary—William W. Bulloch, 45A Union Street, Larkhall, Lanarkshire.
Granted 1936.

4. ISLAY, JURA, AND COLONSAY AGRICULTURAL ASSOCIATION.
Convener—William Walker of Foreland, Foreland House, Bruichladdich, Isle of Islay.
Secretary—Iain M. Mactaggart, Royal Bank Buildings, Bowmore, Isle of Islay.
Granted 1936.

4th (Intermediate) Year—3 SILVER MEDALS.

5. EASTERN DISTRICT OF STIRLINGSHIRE AGRICULTURAL ASSOCIATION.
Convener—William Morton, Bensfield, Falkirk.
Secretary—Robert Waugh, Auction Mart, Falkirk.
Granted 1935. (Grant in abeyance 1937, on account of Alloa Show ; in abeyance 1938—no Show held.)

6. ECHT, SKENE, AND MIDMAR AGRICULTURAL ASSOCIATION.
Convener—David Morris, Craignaloigh, Dunecht, Aberdeenshire.
Secretary—A. F. Robertson, Bank House, Echt, Aberdeenshire.
Granted 1937.

7. GLENKENS AGRICULTURAL SOCIETY.
Convener—Arthur Young of Garroch, Dalry, Kirkcudbrightshire.
Secretary—J. M. Garmory, Pomona Terrace, New Galloway, Kirkcudbrightshire.
Granted 1936. (Show abandoned in 1939 on account of War.)

8. KILLEARN AGRICULTURAL SOCIETY.
Convener—John M'Queen, Laigh Finnich, Dumgoyne Station.
Secretary—A. D. S. Macadam, Drumtian, Balfron Station.
Granted 1937.

9. KILMACOLM AND PORT-GLASGOW AGRICULTURAL SOCIETY.
Convener—Nigel Laird, Torridon, Kilmacolm.
Secretary—James Ferguson, Royal Bank House, Kilmacolm.
Granted 1937.

10. STRATHENDRICK AGRICULTURAL SOCIETY.
Convener—H. Wylie Rennie, Craighat House, Dumgoyne Station.
Secretary—Robert Bilsland, 35 Wylie Avenue, Alexandria, Dumbartonshire.
Granted 1936. (Grant in abeyance 1937.)

11. YARROW AND ETTRICK PASTORAL SOCIETY.
Convener—R. Johnstone, Braidgairhill, Ettrick, Selkirk.
Secretary—George Brunton, Harehead, Selkirk.
Granted 1936. (Show abandoned in 1939 on account of War.)

3rd (Alternate) Year—GRANT OF £12.

12. BATHGATE AGRICULTURAL ASSOCIATION.
Convener—Frank Dawson, Wester Drumcross, Bathgate.
Secretary—John Alston, 13 Mid Street, Bathgate.
Granted 1938.

13. BLACK ISLE FARMERS' SOCIETY.
Convener—Alexander J. Mann, Muiralehouse, Avoch, Ross-shire.
Secretary—Robert Strachan, The Schoolhouse, Avoch, Ross-shire.
Granted 1937. (Grant in abeyance 1938.)

14. CUMBERNAULD AGRICULTURAL SOCIETY.
Convener—Walter Duncan, Wester Dullatur, Dullatur, Dumbartonshire.
Secretary—A. Elrick Gray, Easter Dullatur, Dullatur, Dumbartonshire.
Granted 1938.

15. **Denny and Dunipace Agricultural Association.**
Convener—William Muirhead, Foot-o'-Green, Stirling.
Secretary—John M'Millan, 37 Stirling Street, Denny.
Granted 1938.

16. **Formartine Agricultural Association.**
Convener—Robert Findlay, Corthiemuir, Udny Station, Aberdeenshire.
Secretaries—Alfred Marr and David S. Minto, Cultercullen, Udny Station, Aberdeenshire.
Granted 1938.

17. **Islay Agricultural Association.**
Convener—George Bruce, Home Farm, Bridgend, Isle of Islay.
Secretary—William D. Campbell, National Bank Buildings, Bridgend, Isle of Islay.
Granted 1938.

18. **Skye Agricultural Society.**
Convener—A. MacCallum, D.O.A.S., Estates Office, Portree, Isle of Skye.
Secretary—S. Lindsay Hamilton, D.O.A.S., Estates Office, Portree, Isle of Skye.
Granted 1938.

19. **Stonehouse Agricultural Society.**
Convener—William Wilson, Udston Farm, Stonehouse, Lanarkshire.
Secretary—James N. Steel, Townend Farm, Stonehouse, Lanarkshire.
Granted 1938.

20. **Strathbogie Farmer Club.**
Convener—Alexander Dufton, Corse, Kinnoir, Huntly.
Secretary—John Stuart, Commercial Bank Buildings, Huntly.
Granted 1938.

2nd (Intermediate) Year—3 SILVER MEDALS.

21. **Carnwath Agricultural Society.**
Convener—John Struthers, Anston, Dunsyre, Lanarkshire.
Secretary—A. M. White, Commercial Bank of Scotland Ltd., Carnwath.
Granted 1939.

22. **Cromar, Upper Dee, and Donside Agricultural Society.**
Convener—Lieut.-Colonel William Lilburn of Coull, Aboyne, Aberdeenshire.
Secretary—R. A. M'Connachie, Bank House, Tarland, Aberdeenshire.
Granted 1939.

23. DUNBARTONSHIRE AGRICULTURAL SOCIETY.
Convener—Rear-Admiral W. B. Mackenzie, R.N., of Caldarvan, Alexandria, Dumbartonshire.
Secretary—George Lawrence, Union Bank of Scotland Ltd., Dumbarton.
Granted 1939.

24. KENNETHMONT AGRICULTURAL ASSOCIATION.
Convener—Alexander Anderson, Percylieu, Clatt, Kennethmont, Aberdeenshire.
Secretary—John M. Reid, Ardlair, Kennethmont, Aberdeenshire.
Granted 1939.

25. LOCKERBIE AGRICULTURAL SOCIETY.
Convener—R. Jardine Paterson of Balgray, Lockerbie.
Secretaries—Henderson & Mackay, Solicitors, Bank of Scotland Chambers, Lockerbie.
Granted 1939.

26. MID-ARGYLL AGRICULTURAL SOCIETY.
Convener—Peter Boyd, Cumlodden Estate Office, Furnace, Argyll.
Secretary—J. G. Mathieson, Ri-Cruin, Kilmartin, Lochgilphead, Argyll.
Granted 1939.

27. NEILSTON AGRICULTURAL SOCIETY.
Convener—George I. Young, Hallhill, Howwood, Renfrewshire.
Secretary—John M. Morton, The Clydesdale Bank Ltd., Neilston, Renfrewshire.
Granted 1939.

28. STEWARTRY AGRICULTURAL SHOW.
Promoted by the St Mary's Isle Agricultural Society, the Dalbeattie Agricultural Society, and the Gatehouse District Agricultural Society.
Secretary—J. E. Milligan, Clydesdale Bank, Dalbeattie.
Granted 1939.

29. STIRLING AGRICULTURAL SOCIETY.
Convener—Archibald Weir, Cauldbarns, Stirling.
Secretary—William Thomson, Bearside, Polmaise, Stirling.
Granted 1939.

30. STRATHSPEY FARMERS' CLUB.
Convener—William Grant, Dell of Rothiemurchus, Aviemore.
Secretary—Mrs MacDougall, 2 The Square, Grantown-on-Spey.
Granted 1938. (Grant in abeyance 1938.)

31. UPPER DEESIDE AGRICULTURAL ASSOCIATION.
Convener—James S. Law, Milton of Learney, Torphins, Aberdeenshire.
Secretary—William Kemp, Bank House, Torphins, Aberdeenshire.
Granted 1939.

1st Year—GRANT of £12

32. CARLUKE AGRICULTURAL SOCIETY.
Convener—Thomas C. Bell, Stravenhouse, Carluke.
Secretary—A. M. M'Intosh, National Bank of Scotland Ltd., Carluke.
Granted 1940.

33. LORN AGRICULTURAL SOCIETY.
Convener—John J. Currie, Cuilfail, Kilmelford, Argyll.
Secretary—A. M. Cumming. The National Bank of Scotland Ltd., Oban.
Granted 1939. (Grant in abeyance 1939.)

34. UNITED EAST LOTHIAN AGRICULTURAL SOCIETY.
Convener—A. G. Spence, Pressmennan, Dunbar.
Secretaries—Stirling & Burnet, Solicitors, Haddington.
Granted 1940.

35. WESTERN DISTRICT OF MIDLOTHIAN AGRICULTURAL ASSOCIATION.
Convener—P. H. G. Blackwood, Balgreen, Midcalder.
Secretary—Maxwell C. Dick, Beaconhill, Kirknewton.
Granted 1940.

CLASS 2.

HORSE ASSOCIATIONS—GRANTS OF £15 IN RESPECT OF STALLIONS ENGAGED FOR AGRICULTURAL PURPOSES.

OLD REGULATIONS (applicable to Nos. 1 to 10 for the year 1940).

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such Grants shall not exceed the sum of £210 in any one year.

(*Note.*—As a special provision this sum has been raised to £300 for the year 1940.)

2. The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year. It is intended that the Grant shall be used by the Association or Society for the purpose of enabling it to secure a better class of Stallion.

3. The Grants will be available only for Stallions which, for the years to which the Grants apply, are registered in the Register of Certified Draught Stallions published by the Department of Agriculture for Scotland. (For information regarding the Registration of Stallions, apply to the Secretary of the Department of Agriculture for Scotland, St Andrew's House, Edinburgh.)

4. The Grant will continue for three years provided the Association receiving the Grant shall hire a Registered Stallion in the two intermediate years.

5. In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. REGULATIONS 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), 12 (Renewal of Grant), and 13 (Disposal of Applications) applicable to Class 1, shall be applicable to this Class.

Grants in 1940.

5th and Final Year—GRANT OF £15.

1. BUCHLYVIE AND VALE OF MENTEITH HORSE-BREEDING AND STOCK IMPROVEMENT SOCIETY, LTD.
Convener—John M'Queen, Laigh Finnich, Dumgoyne Station.
Secretary—Miss M. M. Drysdale, 55 Colinton Road, Edinburgh.
Granted 1936.

2. CENTRAL FORFARSHIRE HORSE-BREEDING ASSOCIATION.
Convener—James Scott, St John's Cottage, Forfar.
Secretary—Walter R. Findlay, Mains of Balmadies, Guthrie.
Granted 1936.

3. ROTHIEMAY HORSE-BREEDING SOCIETY.
Convener—James Smart, Cairnwhelp, Cairnie, Aberdeenshire.
Secretary—Alexander J. Walker, Woodside, Rothiemay, Huntly.
Granted 1936.

4. WALLS AND HOY AGRICULTURAL SOCIETY.
Convener—James Baillie, Farm of Snelsetter, Longhope, Walls, Orkney.
Secretary—William Sutherland, The Old Custom House, Longhope, Walls, Orkney.
Granted 1935. (Grant in abeyance 1939.)

5. WESTRAY HORSE-BREEDING SOCIETY.
Convener—William F. Brown, Breckowall, Westray, Orkney.
Secretary—Benjamin Bremner, Hilldevale, Westray, Orkney.
Granted 1936.

4th (Intermediate) Year—Grant in Abeyance.

6. CAITHNESS CLYDESDALE CLUB.
Convener—Donald Harrold, Lower Reiss, Wick, Caithness.
Secretary—John Gowans, Janestown, Wick, Caithness.
Granted 1937.

7. LANARK HORSE-BREEDING SOCIETY.
Convener—Andrew Lawson, Easterseat, Carluke.
Secretary—Alexander Clarkson, Pretts Mill, Lanark.
Granted 1937.

8. LORN ENTIRE HORSE SOCIETY.
Convener—Donald MacGillivray, Barcaldine Home Farm, Connel, Argyll.
Secretary—A. M. Cumming, National Bank of Scotland Ltd., Oban.
Granted 1937.

9. ORKNEY WEST MAINLAND HORSE-BREEDING SOCIETY.
Convener—Charles Hourston, Beaquoy Farm, Dounby, Kirkwall.
Secretary—John G. S. Flett, Nistaben Farm, Harray, Kirkwall.
Granted 1937.

10. STRATHBOGIE FARMER CLUB.
Convener—Alexander Dufton, Corse, Kinnoir, Huntly.
Secretary—John Stuart, Commercial Bank Buildings, Huntly.
Granted 1937.

NEW REGULATIONS, 1940 (applicable to Nos. 11 to 25).

1. The Highland and Agricultural Society will make Grants to Horse Associations and other Societies in different districts engaging Stallions for agricultural purposes. The total sum expended by the Highland and Agricultural Society in such grants shall not exceed the sum of £210 in any one year.

(*Note.*—As a special provision this sum has been raised to £300 for the year 1940.)

2. *Application of Grant.*—The portion of the Grant to any one Association or Society shall not exceed the sum of £15 in any one year. **It is intended that the Grant shall be used by the Association or Society for the purpose of enabling it to secure a better class of Stallion.**

3. *Duration of Grant.*—The Grant will continue for three consecutive years.

4. *Registration of Stallions.*—The Grants will be available only for Stallions which, for the years to which the Grants apply, are registered in the Register of Certified Draught Stallions published by the Department of Agriculture for Scotland. (For information regarding the Registration of Stallions, apply to the Secretary of the Department of Agriculture for Scotland, St Andrew's House, Edinburgh.)

5. *Engagement of Stallions.*—In the event of a Horse not being engaged in any one year while the provisions of the Grant are in force, the Grant made by the Highland and Agricultural Society will cease.

6. *Renewal of Grant.*—An Association or Society which has received a Grant shall not be eligible to apply for a renewal of the Grant until after the expiry of three years from the termination of the previous Grant.

7. REGULATIONS 2 (Committee and Convener), 10 (Reports), 11 (Time of Payment), and 13 (Disposal of Applications) applicable to Class 1, shall be applicable to this Class.

3rd and Final Year—GRANT OF £15.

11. EAST MAINLAND CO-OPERATIVE HORSE-BREEDING SOCIETY LTD.
Convener—Robert C. Twatt, Upper Scapa, St Ola, Orkney.
Secretary—David J. Laughton, Millbrae, Tankerness, Kirkwall.
Granted 1938.

12. MACHARS HORSE-BREEDING ASSOCIATION.
Convener—John Gordon, Blairshinnoch, Port William, Wigtownshire.
Secretary—William Dickson, Marine Terrace, Port William, Wigtownshire.
Granted 1938.

13. NAIRNSHIRE FARMING SOCIETY.
Convener—Captain Joseph Mackay, Glebe End, Nairn.
Secretary—Archibald J. Mackintosh, St Colms, Auldearn, Nairn.
Granted 1938.

14. SCOTTISH CENTRAL HORSE-BREEDING ASSOCIATION.
Convener—John Young, Cobblebrae Farm, Falkirk.
Secretary—Mrs M'Lay, Dunvegan, Causewayhead, Stirling.
Granted 1938.

15. SELKIRK AND GALASHIELS AGRICULTURAL SOCIETY.
Convener—Alexander Hogg, Birkenside, Earlston, Berwickshire.
Secretary—John Hendrie, The Yair, Galashiels.
Granted 1938.

16. SOUTH DEESIDE STOCK IMPROVEMENT SOCIETY.
Convener—John Pirie, Maryfield, Banchory-Ternan.
Secretary—John Duncan, Craiglug, Durris.
Granted 1938.

2nd Year—GRANT OF £15.

Nil.

1st Year—GRANT of £15.

17. DEESIDE STOCK IMPROVEMENT SOCIETY.
Convener—John Thomson, J.P., Beanshill, Milltimber, Aberdeenshire.
Secretary—Peter Ross, 15 Westfield Road, Stonehaven.
Granted 1940.

18. LOWER DONSIDE HORSE-BREEDING SOCIETY.
Convener—Patrick Forbes, Aquherton, Kintore, Aberdeenshire.
Secretary—W. Allan Craig, P.O. Buildings, Kemnay, Aberdeenshire.
Granted 1940.

19. SANDAY AGRICULTURAL ASSOCIATION.
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Thomson, Ortie, Sanday, Orkney.
Granted 1940.

20. SHAPANSEY AGRICULTURAL ASSOCIATION.
Convener—William T. Wood, Balfour Mains, Shapansey, Orkney.
Secretary—D. L. Kemp, Bayview, Shapansey, Orkney.
Granted 1940.

21. STONEHAVEN DISTRICT HORSE-BREEDING ASSOCIATION.
Convener—A. E. Ergo, Cheyne, Stonehaven.
Secretary—James B. Connon, Commercial Bank Buildings, Stonehaven.
Granted 1940.

22. STRATHSPEY FARMERS' CLUB.
Convener—William Grant, Dell of Rothiemurchus, Aviemore.
Secretary—Mrs MacDougall, 2 The Square, Grantown-on-Spey.
Granted 1940.

23. UPPER DONSIDE AGRICULTURAL SOCIETY.
Convener—Frank Jamieson, Netherord, Rhynie, Aberdeenshire.
Secretary—Alexander Kellas, Hillockhead, Cushnie, Alford, Aberdeenshire.
Granted 1940.

24. WEST OF CAITHNESS (CLYDESDALE) HORSE-BREEDING SOCIETY.
Convener—John H. Davidson, Lower Dounreay, Reay, Caithness.
Secretary—Andrew Innes, North Calder, Thurso, Caithness.
Granted 1940.

25. WEST OF FIFE CLYDESDALE ENTIRE HORSE SOCIETY.
Convener—James Butters, Masterton, Dunfermline.
Secretary—John Stevens, Estate Office, Crossford, Dunfermline.
Granted 1940.

CLASS 3.

LOCAL AGRICULTURAL SOCIETIES—GRANTS OF SILVER MEDALS IN AID OF PREMIUMS.

REGULATIONS, 1940.

The Society, being anxious to co-operate with local Societies, will give a limited number of Silver Medals annually to Societies (but not concurrently if also in receipt of a Grant under Class 1), in addition to the Money Premiums offered by them, for—

1. Best Bull, Cow, or Heifer of any pure breed specified in Class 1.
2. Best Stallion or Mare of any pure breed specified in Class 1.

3. Best Tup or Pen of Ewes of any pure breed specified in Class 1.
4. Best Boar, Sow, or Breeding Pig of any pure breed.
5. Best Pens of Poultry.
6. Best Sample of any variety of Wool.
7. Best Sample of any variety of Seeds.
8. Best-managed Farm.
9. Best-managed Green Crop.
10. Best-managed Hay Crop.
11. Best-managed Dairy.
12. Best Sweet-Milk Cheese.
13. Best Cured Butter.
14. Best Fresh Butter.
15. Best collection of Roots.
16. Best-kept Fences.
17. Best Sheep-Shearer.
18. Most expert Hedge-Cutter.
19. Most expert Labourer at Draining.
20. Best Maker of Oatcakes.

It is left to the local Society to choose out of the foregoing list the classes to which the Medals are to be allocated.

RULES OF COMPETITION.

1. All Competitions must be at the instance of a local Society.

2. The classes for which Medals are granted must be in accordance with the foregoing list. The Local Committee shall select the classes, and specify them in the Report.

3. The offer of the Medals must be announced in the Premium List and Catalogue of the Show as "presented by the Highland and Agricultural Society of Scotland."

4. The Medals are granted for two years, and lapse if not awarded in those years.

5. No Society shall receive more than two Medals in any year.

6. A Committee of Management shall be appointed, and either the Convener of the Committee or the Secretary of the Society **must be a member of the Highland and Agricultural Society of Scotland.**

7. When it is agreed to hold the General Show of the Society in any one of the Show Divisions, no Local Society may hold a Show within that Division in the **three months** immediately **preceding** the date of the General Show. **In the event of a Show being held, the entire Grant will be cancelled.**

8. The Money Premiums given in the District must be not less than £2 for each Medal offered.

9. The Medal for Sheep-Shearing shall always accompany the highest Money Premium.

10. There must not be fewer than three competitors in all the classes.

11. Regarding Reports and despatch of Medals, Rules 10 and 11, Class 1, will apply.

12. When a grant of Medals has expired, a Society can only apply again for Medals after the lapse of a period of two years.

Grants in 1940.

2nd Year.

1. MAUCHLINE HORTICULTURAL AND AGRICULTURAL SOCIETY.
Convener—James Campbell, Kenmore, Mauchline, Ayrshire.
Secretary—R. C. Baird, B.Sc., Ashgrove, Mauchline, Ayrshire.
Granted 1938. (2 Medals—Roots and Produce.) (Grant in abeyance 1939 on account of War.)

2. ROTHIENORMAN AUTUMN EXHIBITION SOCIETY.
Convener—John W. Cruickshank, Logie Newton, Rothienorman, Aberdeenshire.
Secretary—James Simpson, Brownhill, Rothienorman, Aberdeenshire.
Granted 1938. (2 Medals — Roots and Oatcakes.) (Grant in abeyance 1939 on account of War.)

3. SOUTH UIST AND BENBECULA CATTLE SHOW SOCIETY.
Convener—Dr James Paterson, Sorelle Lodge, Benbecula, Isle of South Uist.
Secretary—J. Shearer, Commercial Bank House, Lochboisdale, Isle of South Uist.
Granted 1938. (2 Medals—Dairy Produce.) (Grant in abeyance 1938.)

4. VALE OF ALFORD AGRICULTURAL ASSOCIATION.
Convener—D. F. Proctor, Tillyfour, Tough, Whitehouse, Aberdeenshire.
Secretary—A. Imlach, Ellangowan, Alford, Aberdeenshire.
Granted 1939. (2 Medals—Stock.)

5. WEST LINTON AGRICULTURAL SOCIETY.
Convener—John S. Dickson, Horsburgh Castle, Peebles.
Secretary—.........................
Granted 1939. (2 Medals—Stock.)

1st Year.

6. BLACKWATER, GLENSHEE, AND UPPER GLENISLA AGRICULTURAL ASSOCIATION.
Convener—Lieut.-Colonel J. A. Don, D.S.O., Cray, Glenshee, Blairgowrie.
Secretary—Alexander F. M'Intosh, Dunay, Blacklunans, Blairgowrie.
Granted 1939. (1 Medal — Green Crop.) (Grant in abeyance 1939 on account of War.)

7. EAST OF FIFE AGRICULTURAL SOCIETY.
Vice-Convener—Samuel W. Weir of Balcomie, Crail, Fife.
Secretary—George M'Dougall, Commercial Bank of Scotland Ltd., Colinsburgh, Fife.
Granted 1940. (2 Medals—Stock.)

CLASS 4.

SPECIAL GRANTS—1940.

(1) ANNUAL.

1. BRITISH WOMEN'S AGRICULTURAL ASSOCIATION.

1 Minor Gold Medal and 1 Medium Silver Medal for Champion Buttermaking Competitions at the Scottish National Fat Stock Club Show, Edinburgh.

Hon. President—Mrs William Meiklem, Bennochy Park, Kirkcaldy.

President—Mrs John W. Prentice, Longcarse, Alloa.

Hon. Secretary—Mrs D. G. More, 5 Kilbryde Crescent, Dunblane.

Granted 1908. (Grant in abeyance 1939 on account of War.)

2. NORTHERN COUNTIES ARTS AND CRAFTS SOCIETY—£20.

Convener—Miss Mackintosh of Raigmore, Raigmore, Inverness.

Joint-Secretaries—Mrs Mitford, Berryfield, Lentran, Inverness, and Miss Ruth C. Mackintosh, Raigmore, Inverness.

Granted 1922.

3. SCOTTISH NATIONAL UNION OF ALLOTMENT HOLDERS.

£15 and 15 Medium Silver Medals to be offered as Prizes for best Allotments.

Secretary and Treasurer—Archibald W. Fisher, M.B.E., Solicitor, 18 Hill Street, Edinburgh.

Granted 1927.

4. GALLOWAY DAIRY PRODUCE SHOW SOCIETY.

£20, to be competed for at the Dairy Produce Show at Castle Douglas.

President—Walter C. Crawford, Chapmanton, Castle Douglas.

Secretary—Patrick Gifford, Royal Bank Offices, Castle Douglas.

Granted 1936. (Grant in abeyance 1939 on account of War.)

5. SHETLAND FLOCK BOOK SOCIETY.

£10, 10s., to be offered at Tingwall Show as prizes for Shetland Sheep, judged according to the standard of the Flock Book Society.

Convener—John Sutherland, Bixter, Shetland.

Secretary—John S. Johnston, Brentham Place, Lerwick.

Granted 1938. (For the years 1938-1942 inclusive.)

6. DAMHEAD AND DISTRICT GOAT-BREEDING ASSOCIATION, MID-LOTHIAN.

1 Large Silver Medal for Goat Show.

Convener—Mrs J. S. Bennet, Buckstane, Braid Road, Edinburgh 10.

Secretary—W. F. Burton, Pentland House, Loanhead, Midlothian.

Granted 1939. (Grant in abeyance 1939 on account of War.)

7. SCOTTISH WOMEN'S RURAL INSTITUTES.

Grants of £3 each to Federations as prize-money in connection with a "Utility Garden Scheme" for encouraging increased production of vegetables in small gardens during the period of the War. On the basis of 32 Federations organising Competitions, the maximum amount of the grants will be £96.

Convener—The Countess of Elgin, D.B.E., Broomhall, Dunfermline.

Secretary—Miss G. A. Russell, Central Council Office, S.W.R.I., 7 North St David Street, Edinburgh.

Granted 1940.

(2) IN ALTERNATE YEARS.—GRANTS IN 1940.

£3 to each Society, to be competed for at the Annual Shows.

8. ROUSAY AGRICULTURAL SOCIETY, ORKNEY.

Convener—R. S. Mainland, Nearhouse, Rousay, Orkney.

Secretary—John Linklater, Blossom, Sourin, Rousay, Orkney.

Granted 1903.

9. SOUTH RONALDSHAY AND BURRAY AGRICULTURAL SOCIETY, ORKNEY.

Convener—David Scott, Grutha, St Margaret's Hope, Orkney.

Secretary—James Innes, Crowsnest, Hoxa, St Margaret's Hope, Orkney.

Granted 1904.

10. SHAPANSEY AGRICULTURAL ASSOCIATION, ORKNEY.

Convener—William T. Wood, Balfour Mains, Shapansey, Orkney.

Secretary—D. L. Kemp, Bayview, Shapansey, Orkney.

Granted 1934.

(3) IN ALTERNATE YEARS.—GRANTS OF £3 IN ABEYANCE, 1940.

11. ORKNEY AGRICULTURAL SOCIETY.

Convener—Charles Hourston, Beaquoy Farm, Dounby, Kirkwall.

Joint Secretaries—J. C. Croy and D. Flett, Junction Road, Kirkwall.

Granted 1883.

12. **East Mainland Agricultural Society, Orkney.**
Convener—William G. Smith, Hall of Tankerness, Tankerness, Orkney.
Secretary—Alfred C. Tait, Quoykea, Toab, Kirkwall.
Granted 1898.

13. **West Mainland Agricultural Society, Orkney.**
Convener—George Learmonth, jun., Pow, Quoyloo, by Stromness, Orkney.
Secretary—James Wood, Garson, Sandwick, Orkney.
Granted 1900.

14. **Sanday Agricultural Association, Orkney.**
Convener—W. Cowper Ward, Scar House, Sanday, Orkney.
Secretary—John Thomson, Ortie, Sanday, Orkney.
Granted 1902.

15. **Yell Agricultural Society, Shetland.**
Convener—T. R. Manson, Ladybank, West Sandwick, Lerwick.
Secretary—Robert Johnson, The Manse, West Sandwick, Lerwick.
Granted 1931.

CLASS 5.

FEDERATIONS OF SCOTTISH WOMEN'S RURAL INSTITUTES—GRANTS OF £10.

Regulations, 1940.

1. The Highland and Agricultural Society of Scotland will provide annually a sum not exceeding £150 as special Grants to Federations of Scottish Women's Rural Institutes.

2. *Grant to Federation*, £10.—The amount of the Grant to any one Federation shall not exceed the sum of £10 per annum.

3. *Duration of Grant.*—The Grant will continue for two consecutive years.

4. *Disposal of Applications.*—In disposing of applications for Grants, the Directors of the Highland and Agricultural Society shall keep in view the length of interval that has elapsed since the expiration of the last Grant, giving priority to those Federations which have been longest off the list.

5. *Eligibility to Apply.*—All applications must be at the instance of a properly constituted Federation of Institutes.

6. *Application of Grant.*—**The Grant of £10 shall not be applied as a Grant-in-aid to the general funds of a Federation, but must be offered in the form of Prizes at any Show or Competition held under the auspices of the Federation.**

7. *Announcement of Grant.*—**The offer of Prizes must be announced in the Prize List or Catalogue of the Show or Competition as "presented by the Highland and Agricultural Society of Scotland," or the amount of the Grant must be shown as a separate item of donation in the published statement of Accounts.**

8. *Rules of Competition.*—The Rules of Competition for the Prizes, the funds for which are derived from Grants of the Highland and Agricultural Society of Scotland, shall be such as are generally enforced in the case of Prizes offered from the Federation's own funds.

9. *Report to be Submitted.*—Forms of Report will be furnished to the Secretaries of Federations, and these must be completed and returned to the Society as soon as possible after the Show or Competition and in no case later than **1st November.** These Reports are subject to the approval of the Directors of the Highland and Agricultural Society, against whose decision there shall be no appeal. All Reports must be signed and certified as marked on the Form.

The Grant will lapse if no Report is lodged.

10. *Payment of Grant.*—Payment of the Grant will be made in December after the Reports of the Awards have been received and found to be in order and passed by the Board of Directors.

11. *Renewal of Grant.*—A Federation which has received a Grant for two consecutive years shall not be eligible to apply for a renewal of the Grant until after the expiry of two years from the termination of the previous Grant.

Grants in 1940.

2nd Year.

1. BERWICKSHIRE FEDERATION.
Convener—Mrs Stevenson, Blackburn, Lauder, Berwickshire.
Secretary—Miss A. M'B. Cowan, Roselea, Oxton, Berwickshire.
Granted 1939.

2. DUMFRIESSHIRE FEDERATION.
Convener—Mrs Ralston, Holmhill, Thornhill, Dumfriesshire.
Secretary—Mrs Forrester, Kilness, Dumfries.
Granted 1939.

3. EAST LOTHIAN FEDERATION.
Convener—Mrs Hay, Belton, Dunbar.
Secretary—Mrs M'Kemmie, 2 Wemyss Place, Haddington.
Granted 1938. (Grant in abeyance 1938.)

4. MULL, ISLE OF, FEDERATION.
Convener—Mrs Allan of Aros, Tobermory.
Secretary—Mrs Cuninghame, Linndhu, Tobermory.
Granted 1939.

5. ROSS-SHIRE FEDERATION.
Convener—The Lady Marjorie Mackenzie of Gairloch, Conan House, Conon Bridge, Ross-shire.
Secretary—Mrs M'Callum, Sliochd, Dingwall, Ross-shire.
Granted 1939.

1st Year.

6. BUTE, ISLE OF, FEDERATION.
Convener—Miss M'Farlane, Meikle Kilchattan, Kingarth, Rothesay.
Secretary—Miss M. Gray Buchanan, St Margaret's, Ascog, Rothesay.
Granted 1940.

7. MIDLOTHIAN FEDERATION.
Convener—Mrs Mercer, Southfield, Dalkeith.
Secretary—Miss N. Scott Muir, 10 Silverknowes Loan, Edinburgh 4.
Granted 1940.

8. STEWARTRY OF KIRKCUDBRIGHT FEDERATION.
Convener—Mrs Jaffe, Netherhall, Castle Douglas.
Secretary—Miss Stevenson, Douganhill, Dalbeattie.
Granted 1940.

GROUP III.—COTTAGES AND GARDENS, &c.

The following Premiums are offered for Competition.
The Premiums are granted for two years.

CLASS 6.

LOCAL SOCIETIES, &c.—GRANTS FOR BEST-KEPT COTTAGES AND GARDENS.

1.	Best-kept Cottage	£1	0	0
	Second best	0	10	0
2.	Best-kept Cottage Garden	1	0	0
	Second best	0	10	0

Forms of application may be obtained from the Secretary, and should be completed and returned on or before 1st November next, in respect of a Grant commencing in the following year.

RULES OF COMPETITION.

1. Competitions may take place in the different parishes for Cottages and Gardens, or for either separately.

2. The occupiers of Lodges at Gentlemen's Approach Gates and Gardeners' Houses are excluded, as well as others whom the Committee consider, from their position, not to be entitled to compete. The inspection must be completed by the 1st of October. In making the inspection, the Conveners may take the assistance of any competent judges.

3. It shall be left to the Committee in the District to fix two grades of Cottages, with maximum rents of £10 and £16 respectively, and to apply for Grants of £3 in respect of each.

4. To warrant the award of full Premiums, there must not be fewer than three Competitors in each class. If there are less than three Competitors in each class, only half Premium will be awarded.

5. A person who has gained the highest Premium cannot compete again.

6. If the Cottage is occupied by the proprietor, the roof must be in good repair; if the roof is thatch, it must be in good repair, though in the occupation of a tenant. The interior and external conveniences must be clean and orderly; the windows must be free of broken glass, clean, and affording the means of ventilation. Dunghills, and all other nuisances, must be removed from the front and gables. In awarding the Cottage Premiums, preference will be given to Competitors who, in addition to the above requisites, have displayed

the greatest taste in ornamenting the exterior of their houses, and the ground in front and at the gables.

7. In estimating the claims for the Garden Premiums, the judges should have in view—the sufficiency and neatness of the fences and walks: the cleanness of the ground; the quality and choice of the crops; and the general productiveness of the garden.

8. Reports, stating the number of Competitors, the names of successful parties, and the nature of the exertions which have been made by them, must be lodged with the Secretary of the Highland and Agricultural Society *on or before* 1*st November next*.

9. When a grant of Money has expired, the District cannot apply again for aid for four years.

Grants in 1940.

2nd Year.

1. Dreghorn Horticultural and Agricultural Society.
    Convener—Robert Pryde, Elms Lea, Dreghorn, Ayrshire.
    Secretary—Hugh Gibson, 17 Perceton Cottages, Kilmarnock.
    Granted 1939.

1st Year.

2. Old Meldrum and District Branch S.W.R.I.
    Convener—Mrs Morris, Kemp's Hotel, Old Meldrum, Aberdeenshire.
    Secretary—Miss R. Borwick, 8 King Street, Old Meldrum, Aberdeenshire.
    Granted 1939. (Grant in abeyance 1939 on account of War.)

3. Stonehouse Horticultural Society.
    Convener—James C. Plenderleith, Westfield, Manse Road, Stonehouse, Lanarkshire.
    Secretary—Robert M. Muter, 44 Camnethan Street, Stonehouse, Lanarkshire.
    Granted 1939. (Grant in abeyance 1939 on account of War.)

CLASS 7.

LOCAL SOCIETIES, &c.—GRANTS OF MINOR SILVER MEDALS FOR BEST-KEPT COTTAGES AND GARDENS, GARDEN PRODUCE, POULTRY, AND HONEY.

Rules of Competition.

1. The Society will give annually one or two Minor Silver Medals to a limited number of local Associations or individuals, who establish Competitions and Premiums for Cottages, Gardens, Garden Produce, or Bee-Keeping. The Medals will be granted for two years.

2. The Medals may be offered in any two of the following sections, *but under no circumstances will the two Medals be given in one of the sections* :—

(1) Best-kept Cottage or best-kept Cottage and Garden. (One Medal only.)
(2) Best-kept Garden. (One Medal only.)
(3) Best Collection of Garden Produce—Flowers excluded. (One Medal only.)
(4) Best Pen of Poultry. (One Medal only.)
(5) Honey. (One Medal only.)

3. The annual value of each cottage, with the ground occupied in the parish by a Competitor, must not exceed £20. The occupiers of Lodges at Gentlemen's Approach Gates, and Gardeners in the employment of others, are not entitled to compete.

4. If Competition takes place for Garden Produce, such produce must be *bona fide* grown in the Exhibitor's Garden. He will not be allowed to make up a collection from any other Garden. The produce must consist of Vegetables, or Vegetables and Fruit (not Fruit alone). Flowers are excluded.

5. The Honey must be the produce of the Exhibitor's own Hives.

6. To warrant the award of a Medal, there must not be fewer than three Competitors.

7. Forms of Report of Competitions will be furnished to the Secretaries in the different Districts. These must, in all details, be completed and lodged with the Secretary of the Highland and Agricultural Society as soon as possible after the Competition, and in no case later than 1*st November*, for the approval of the Directors, against whose decisions there shall be no appeal.

8. If no Competition takes place in a District for two years the grant expires.

9. When a grant of Medals has expired, the District cannot apply again for a similar grant until after the lapse of a period of two years.

Grants in 1940.

2nd Year.

1. COLINSBURGH AND KILCONQUHAR HORTICULTURAL ASSOCIATION.
Convener—Gilbert R. M'Garva, Balniel, Colinsburgh, Fife.
Secretary—William Adams, Balcarres Gardens, Colinsburgh, Fife.
Granted 1939. (2 Medals.)

2. DREGHORN HORTICULTURAL AND AGRICULTURAL SOCIETY.
Convener—Robert Pryde, Elms Lea, Dreghorn, Ayrshire.
Secretary—Hugh Gibson, 17 Perceton Cottages, Kilmarnock.
Granted 1939. (1 Medal.)

3. ROTHIENORMAN AUTUMN EXHIBITION SOCIETY.
Convener—John W. Cruickshank, Logie Newton, Rothienorman, Aberdeenshire.
Secretary—James Simpson, Brownhill, Rothienorman, Aberdeenshire.
Granted 1938. (1 Medal.) (Grant in abeyance 1939 on account of War.)

1st Year.

4. GLASGOW CORPORATION TRANSPORT RECREATION CLUB.
Secretary—R. Weir Berrie, 46 Bath Street, Glasgow, C.2.
Granted 1940. (1 Medal.)

5. OLD MELDRUM AND DISTRICT BRANCH S.W.R.I.
Convener—Mrs Morris, Kemp's Hotel, Old Meldrum, Aberdeenshire.
Secretary—Miss R. Borwick, 8 King Street, Old Meldrum, Aberdeenshire.
Granted 1939. (1 Medal.) (Grant in abeyance 1939 on account of War.)

6. STONEHOUSE HORTICULTURAL SOCIETY.
Convener—James C. Plenderleith, Westfield, Manse Road, Stonehouse, Lanarkshire.
Secretary—Robert M. Muter, 44 Camnethan Street, Stonehouse, Lanarkshire.
Granted 1939. (1 Medal.) (Grant in abeyance 1939 on account of War.)

GROUP IV.—PLOUGHING, HOEING, AND LONG FARM SERVICE.

1. MEDALS FOR PLOUGHING COMPETITIONS.

The Ploughing Medal will be given to the winner of the first Premium at Ploughing Competitions, provided a Report in the following terms on the official form is made to the Secretary, within one month of the Competition, by a Member of the Society. Forms of Report to be had on application.

FORM OF REPORT.

I, of , Member of the Highland and Agricultural Society, hereby certify that I attended the Ploughing Match of the Association at in the county of on the when ploughs competed ; of land were assigned to each, and hours were allowed for the execution of the work. The sum of £ was awarded as follows :—

[Here enumerate the names and designations of successful Competitors.]

RULES OF COMPETITION.

1. All Matches must be at the instance of a Local Society or Ploughing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can report only one Match; and a Ploughman cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal, there must have been 12 Ploughs in actual competition for the medal (*i.e., in the particular class for which the medal was offered*) and not less than £3 awarded in Prizes by the Local Society. The Medal to be given to the winner of the first prize.

7. The Local Society or Ploughing Association shall decide what class of ploughs shall compete for the Medal, and if so agreed, may offer it for competition to the class of plough most generally in use in the district.

8. The Local Society or Committee may, if they desire, arrange to let each Ploughman have one person to guide the horses for the first two and the last two furrows, but in no case shall Ploughmen receive any other assistance, and their work must not be set up or touched by others. Attention should be given to the firmness and sufficiency of the work below, more than to its neatness above the surface.

9. The Local Committee is required to fix the time to be allowed for ploughing the portion of land, and they are recommended that the time be at the rate of not more than fourteen hours per imperial acre on light land, and eighteen hours on heavy or stony land.

NOTE.—The attention of the Directors of the Society has frequently been drawn to certain irregularities which have occurred in connection with the conduct of Ploughing Matches and the completion of the Reports thereon. Complaints have been made (*a*) that the allotted amount of ground has not been ploughed, within the specified time, by the competitor awarded the first prize; (*b*) that the Report sent to this Society has been signed by a Member of the Society who was not present at the Match. It has to be pointed out that any infringement of the above Rules by a Local Society or Ploughing Association will render that Society or Association liable, at the discretion of the Board of Directors, to be debarred from receiving the Society's Medals.

2. MEDALS FOR HOEING COMPETITIONS.

The Minor Silver Medal will be given to the winner of the first Premium at Hoeing Competitions, provided a Report on the official form is made to the Secretary within a month of the Competition by a Member of the Society. Forms of Report to be had on application.

RULES OF COMPETITION.

1. All Matches must be at the instance of a Local Society or Hoeing Association, and no Match at the instance of an individual, or confined to the tenants of one estate, will be recognised.

2. The title of such Society or Association, together with the name and address of its Secretary, must be registered with the Secretary of the Highland and Agricultural Society of Scotland, 8 Eglinton Crescent, Edinburgh.

3. Not more than one Match in the same season can take place within the bounds of the same Society or Association.

4. All reports must be lodged within one month of the date of the Match, and certified by a Member of the Highland and Agricultural Society who was present at it.

5. A Member can only report one Match; and same Competitor cannot carry more than three Medals in the same season.

6. To warrant the grant of the Medal there must have been twelve hoes in Competition, and not less than Three Pounds awarded in prizes by the Local Society or Association. The Medal to be given to the winner of the first prize.

7. The time to be allowed to be decided by the local Committee, but in no case to exceed two hours for two drills of 100 yards each, the third drill being unoccupied, so that Competitors do not interfere with their neighbour's work.

8. Competitors must finish their work as they go along—no turning back or after-dressing allowed. Hand-picking or transplanting shall be strictly prohibited.

9. A Committee shall be appointed to watch the work, and any Competitor found transplanting or otherwise not complying with the Rules shall have his number withdrawn, and be debarred from receiving any prize which might otherwise have been awarded to him.

NOTE.—Medals will be awarded under similar conditions for Competitions in hand-singling.

3. CERTIFICATES AND MEDALS FOR LONG FARM SERVICE.

Certificates and Silver Medals for long service will be awarded by the Society to farm servants, male or female, having an approved service in Scotland of not less than thirty years (not necessarily continuous) —(*a*) with one employer on the same or different holdings ; (*b*) on the same holding with different employers.

Special Certificates and Gold Medals are also awarded to farm servants, male or female, having an approved service in Scotland of not less than forty-five years (not necessarily continuous), on similar conditions of employment as the above.

Forms of Application are obtainable from the Secretary, 8 Eglinton Crescent, Edinburgh.

War Service to count towards the time required for qualification, where farm servants have returned to same service or employment with same farmer or his family.

The award is strictly confined to **Farm** workers, such as Ploughmen, Cattlemen, and Shepherds.

Domestic and House Servants and Estate workers, such as Foresters, Carters, Grooms, &c., are not eligible.

INVERNESS SHOW, 1940

At a Meeting of Directors, held on 1st November 1939, it was decided, in view of the existing state of War, "That the arrangements for the Annual Show, to be held at Inverness in 1940, be not proceeded with."

MEMBERS ADMITTED SINCE THE LIST WAS PUBLISHED IN APRIL 1939.

ARRANGED ACCORDING TO SHOW DISTRICTS.

(Elected 7th June 1939 and 3rd January 1940.)

1.—GLASGOW DIVISION

ARGYLL

Admitted
1940 Alexander-Hamer, R. I., Isle of Gigha
1939 Binnie, John, Rockside, Bruichladdich, Islay
1939 Blair, Mrs Edith Campbell, Dalchenna, Inveraray
1939 Blair, John Campbell, Dalchenna, Inveraray
1939 Campbell, Colin, "Garavoirne," Campbeltown
1939 Dickson, John, Farm Manager, Carskiey Home Farm, Southend, Kintyre
1939 Gibson, Alexander, Factor, Lochbuie, Mull
1939 Hall, William Peter Macalister, of Crossaig, by Tarbert
1939 Macdonald, Donald, J.P., Sheepknowe, Bunessan, Mull
1939 M'Millan, Iain, Farm Manager, Stronachullin, Ardrishaig
1939 Smith, David Patrick, Lochavich, Taynuilt

AYR

1939 Boswell, Robert William Douglas, Auchinleck House, Auchinleck
1939 Caldwell, David Young, Cockhill, Kilmarnock
1939 Christal, Robert, "Crawfordston," Annbank Station
1940 Forrest, James Pearson, Kingencleugh House, Mauchline
1939 M'Andrew, Donald, Victoria Grain Mills, North Quay, Ayr
1940 Morton, John, Milton, Galston
1939 Scott, J. Crichton, Victoria Grain Mills, North Quay, Ayr
1939 Smillie, James Govan, Victoria Grain Mills, North Quay, Ayr
1939 Stevenson, Mrs Margaret, Balig, Ballantrae
1939 Templeton, Jacob, Rottenrow, Mauchline
1939 Templeton, John, Willoxton, Mauchline
1939 Templeton, William, Syke, Mauchline
1939 Turner, William (Westcon, Ltd.), 7 Marchmont Road, Ayr
1939 Wilson, James S., Outmains, Tarbolton

LANARK

1939 Bankier, William, Farms Manager, Gartloch Farm, Gartcosh, Glasgow
1939 Bulloch, William W., 45 Union Street, Larkhall
1939 Campbell, Miss Ena L., Hairmyres Colony, East Kilbride
1939 Chassels, Mrs Margaret, Athrongrange, Motherwell
1939 Chassels, Miss Margaret, Athrongrange, Motherwell
1939 Chassels, Mirrlees, Athrongrange, Motherwell
1939 Chassels, William, jun., Athrongrange, Motherwell
1939 Fleming, John J., Meadowflatt, Thankerton, Biggar
1939 Haddow, John Dalglish, The Priory, Lesmahagow
1940 Hall, D. Stuart, "Fir Knowe," Stepps, near Glasgow
1939 King, Miss Mary, Hairmyres Colony, East Kilbride
1939 Kinloch, John (M'Kinnon & M'Donald, Ltd.), 75 Bothwell Street, Glasgow, C.2
1939 Martin, Robert, Lochfield, Caledonian Road, Wishaw
1940 Newall, Archibald Park, M.I.Mech.E., Woodside Engineering Works, Possilpark, Glasgow, N.
1939 Pettigrew, T., Farm Manager, Hairmyres Colony, East Kilbride
1939 Stewart, Mrs A. V. A., Murdostoun Castle, Newmains
1940 Tasker, John, Auctioneer, Auction Market, Biggar
1939 Thomson, William Allan, 37 Waverley Crescent, Lanark
1939 Whitson, E. J., Forefaulds, East Kilbride

RENFREW

1939 Black, D. Crawford (Thomas Black & Sons (Greenock), Ltd.), 25 Cathcart Street, Greenock
1939 Donald, David Elder, 22 Hamilton Avenue, Pollokshields, Glasgow, S.1
1940 Love, James B., Knowes, Lochwinnoch
1939 Sturrock, Ford G., Crofthead House, Neilston

2.—PERTH DIVISION

ANGUS

(WESTERN DISTRICT)

1939 Gellatly, James Rae, C.A., 20 Reform Street, Dundee
1940 Ivory, Eric J., of Brewlands, Glenisla
1940 Kidd, Edward G., Panmurefield Nurseries, Broughty Ferry, Dundee

FIFE

1940 Allan, Thomas, Butchery Manager, Kettle Co-operative Society, Kingskettle
1940 Berwick, Robert, Balgarvie, Cupar
1940 Berwick, Thomas, Balgarvie, Cupar
1939 Bethune, William, St Elmo, Peat Inn, Cupar
1939 Blair, David M., Little Inch Farm, Wormit
1939 Dick, Colin James Mungall, Transy, Dunfermline
1940 Dickie, Ian, Kettle Farm, Kingskettle
1939 Dodds, James, Torr Forret, Cupar
1940 Garden, Alexander, Farm Manager, Cunnoquhie, Ladybank
1939 Graham, Alexander M., Kedlock Farm, Cupar
1940 Kirkcaldy, John, Rameldry Farm, Kingskettle, Ladybank
1939 Lamont, Alan Montgomerie, Bullions Farm, Cairneyhill
1940 Lawson, Alexander David Duncan, of Blinkbonny, Newburgh
1940 Lumsden, David, 1 Gairy Park, Glencraig
1940 Stevens, John, Estate Office, Crossford, Dunfermline
1939 Wilson, James, 37 Shamrock Street, Dunfermline
1939 Wilson, Robert, Mains of Beath, Crossgates
1940 Young, Thomas, Balgrummo Farm, Leven

PERTH

(PERTH SHOW DISTRICT)

1939 Hay, James D., jun , Glenearn, Bridge of Earn
1939 Lamond, John, Finegand, Glenshee, Blairgowrie
1939 Lewis, Miss Grace, N.D.D., Old Academy, Rose Terrace, Perth
1939 Little, John, Blackfriars Street, Perth
1939 Livingstone, Alexander Ramsay, Mains of Cargill, Meiklеour
1939 Stewart, Hamish D., Clachan of Struan, Calvine
1939 Strang, James, Moneydie, Perth

3.—STIRLING DIVISION

CLACKMANNAN

1940 Hope, Duncan, Haulage Contractor, Gateside Cottages, Dollar
1940 Morrison, Norman, Solsgirth Home Farm, Dollar
1939 Wilson, Thomas, Gartary, Clackmannan

DUMBARTON

1939 Bryce, Andrew, Greenside Farm, Cumbernauld Station
1939 Hay, David, Carrickstone Farm, Cumbernauld
1940 Kay, William, Garnhall, Castlecary
1939 M'Naughton, John, South Muirhead, Cumbernauld Station

PERTH

(STIRLING SHOW DISTRICT)

1939 BREADALBANE, The Earl of, M.C., D.L., Auchmore House, Killin
1940 Cairns, James S., jun., West Biggs, Blackford
1939 Dowie, James, Cambushennie, Dunblane
1939 Dowie, John, Cambushennie, Dunblane
1939 Dowie, John F., Cambushennie, Dunblane
1939 Dowie, William, Cambushennie, Dunblane
1939 Mackenzie, Edward S., Estate Office, Doune
1939 Young, Robert Mathieson, "Zona," Orchil Road, Auchterarder

STIRLING

1939 Aitkenhead, Thomas, 10 Mungalhead Road, Falkirk
1939 Cameron, Donald C., Spittalhill, Fintry
1939 Chapman, Alexander S., M.R.C.V.S., Springbank, Buchlyvie
1940 Cormack, Alexander (John Wallace & Sons, Ltd.), Sealladh Mohr, Killearn
1939 Davies, Thomas Henry, Millfield Stables, Polmont
1940 Dow, Dr Eric, Fernfield, Bridge of Allan
1939 Fotheringham, John M'Gregor, West Drip, Stirling
1939 Fotheringham William West Drip, Stirling
1939 Grant, Charles, 13 Netherby Road, Airth, by Falkirk
1940 Hamilton, Robert, Ivybank, Polmont
1939 Kerr, John, 35 Cornton Road, Causewayhead, Stirling
1939 Key, A. B. M., 11 Muirend Road, Stirling
1939 Macadam, James, Drumtian, Balfron Station
1939 M'Farlane, David, Bridgehaugh, Stirling
1939 M'Laren, Mrs L. D., Touchmollar, Cambusbarron, Stirling
1939 Robertson, Alexander D., Langton, Laurieston
1939 Stirling, George, Fairfield Farm, Kippen Station
1939 Turnbull, Robert, jun., Whinfell, Bridge of Allan
1939 Waddell, Robert Wardrope, Greenbank Farm, Falkirk

4.—EDINBURGH DIVISION

EAST LOTHIAN

1939 Cadzow, Denis Johnston, Duncrahill, Pencaitland
1939 Cadzow, James Neil, Duncrahill, Pencaitland
1939 Fraser, Ian, No. 3 Holding, East Fortune, Drem
1939 Hamilton, Gavin, Adniston, Macmerry
1939 Mackintosh, Harold, Bughtknowe, Humbie
1939 Main, Thomas, Waughton Farm, Prestonkirk
1939 Miller, Joseph, 7 Gardener Street, Dunbar
1939 Morrison, Charles W., Amisfield, Haddington
1939 Steuart, Major C. B , Westwood, Longniddry

MID-LOTHIAN

1939 Allison, Mrs William, Campend, Dalkeith
1939 Arnott, John, Edgelaw, Gorebridge
1939 Barrie, William, Wester Mosshatt, West Calder
1939 Bathgate, Thomas S., Bryans, Newtongrange
1939 Black, William, Tower House Dairy, Liberton
1939 Brown, Alexander B , Fordel Parks, Dalkeith
1939 Brown, James, Hawthorn Cottage, Main Street, Davidson's Mains, Edinburgh 4
1940 Denholm, George, c/o S.C.W.S., Ltd., Links Place, Leith
1940 Dick, John, General Manager, St Cuthbert's Co-operative Association, Ltd., 92 Fountainbridge, Edinburgh
1939 Dick, John R., Torphin Farm, Colinton
1939 Eaton, William James, 17 Riselaw Crescent, Braids, Edinburgh
1939 Finlayson, Thomas D. J., The London & Lancashire Insurance Co., Ltd., 8 St Andrew Square, Edinburgh
1939 Fraser, Miss Jean, 20 Moray Place, Edinburgh
1939 Gilchrist, Mrs Phyllis Mary, 6 Church Hill, Edinburgh 10
1939 Gilchrist, William Harvie, 6 Church Hill, Edinburgh 10
1939 Hall, William, Butcher, Buccleuch Place, Dalkeith
1940 Hamilton, Daniel, Tower Cottage Dairy, Liberton
1939 Hamilton, John S., Whitecraig, Inveresk
1939 Herdman, John, 125 Constitution Street, Leith
1940 Irvine, Alexander, c/o S.C.W.S., Ltd., Links Place. Leith
1939 Larmour, J. S., 34 Bryson Road, Edinburgh
1940 Macandrew, Gordon C., 86 Lothian Road, Edinburgh 3
1939 MacLennan, David L. F., c/o Messrs J. & J. Allan, Ltd., 2 Walker Street, Edinburgh 3
1939 M'Nicol, John, Edgefield Farm, Loanhead
1939 M'Phail, Robert W., "St John's," 12 St Bernard's Row, Edinburgh
1939 Macpherson, Thomas, 61 Spottiswoode Road, Edinburgh
1939 Maxwell, Alexander Scott, 5 Campie Road, Musselburgh
1939 Maxwell, George, 5 Campie Road, Musselburgh
1939 Meikle, William, Fernieflat Farm, Juniper Green
1939 Menzies, Miss Agnes C., Broomhills Farm, Liberton
1939 Millar, Alexander W., c/o Messrs Donaldson & Smith, Ltd., 49 Constitution Street, Leith
1939 Miller, David, 72 Northumberland Street, Edinburgh
1940 Miller, James W., 134 Saughton Road North, Edinburgh 12
1939 MONTGOMERIE, The Lord, Oxenfoord Home Farm, Ford
1939 Morris, R. G. C., c/o W. & F. Haldane, W.S., 4 North Charlotte Street, Edinburgh
1939 Muir, John, Turniedykes, Ford
1940 Nisbett, Hamilton More, The Drum, Gilmerton
1939 OLIVER, Colonel Sir Arthur, C.B., C.M G , F R.C.V.S., Principal, Royal (Dick) Veterinary College, Edinburgh
1939 Peace, Thomas, St Margaret's, Polton Road, Loanhead
1939 Ritchie, Stewart Mackenzie, Rosemains, Ford
1939 Ross, John, Contentibus Farm, Mid-Calder
1940 Ross, William, Estate Office, Penicuik
1939 Saffrey, P. W., Marldene, Ford
1939 Sandilands, Andrew, 5 Clifton Terrace, Edinburgh
1939 Simpson, James (Thomas Ovens & Sons, Ltd.), 40 Timber Bush, Leith
1939 Sinclair, A. H. H., M.D., F.R.C.S.E., 6 Charlotte Square, Edinburgh
1940 Stevenson, Stanley S., 67 Baronscourt Terrace, Edinburgh 8
1940 Stewart, Mark S (Stewart Brothers), 135 Constitution Street, Leith
1939 Telfer, John H., Farm Manager, Lingerwood, Newtongrange
1939 Thomson, Thomas R., 12 Restalrig Crescent, Edinburgh
1939 Tudhope, James, "Lawhead," 32 Morton Street, Joppa, Portobello
1939 Wallace, John, Stobs Farm, Gorebridge
1939 WHITBURGH, Lord, Whitburgh House, Ford
1939 Wood, James, Clapperton Hall, Mid-Calder

WEST LOTHIAN

1939 Braes, John, Niddry Farm, Winchburgh
1939 Bryson, William, Parkhead, Linlithgow
1939 Kerr, Andrew Cecil, Westfield, Winchburgh
1939 Lawson, Robert, Mosslea, Bathgate
1939 Newbigging, James, Rousland Farm, Linlithgow
1939 Newbigging, Mrs James, Rousland Farm, Linlithgow

5.—ABERDEEN DIVISION

ABERDEEN

1940 Aitken, Harry B., Factor, Crowmallie Estates, 25 Crown Street, Aberdeen
1940 Duguid, Major Tom, Belhelvie Lodge, Balmedie
1940 Elrick, W. J., The Manse, Whitehill, New Deer
1939 Gordon, Mrs B. Hood Linzee, Cluny Castle, Aberdeenshire
1939 Gray, Alexander, jun., North Wells, Rothienorman
1939 Hutchison, Thomas M., Drumgarth, Pitfodels
1939 Innes, William Knox, Dunscroft, Gartly
1940 Mathieson, Thomas Duncan, 323 Holburn Street, Aberdeen

BANFF

1939 Birnie, James G., Parkmore Lime Works, Dufftown

KINCARDINE

1939 M'Kenzie, Ian L., Pittengardner, Fordoun
1939 Mitchell, John, Newton, Laurencekirk
1939 Robertson, William, Balmakewan, Laurencekirk

6.—DUMFRIES DIVISION

DUMFRIES

1939 Howatson, James, Potstown, Middlebie, by Lockerbie
1939 Irving, James F., Springfield Dairy, Gretna
1939 Jenkins, Mrs Alice Maud, Mount Annan, Annan
1939 Jenkins, John George, Mount Annan, Annan
1939 Mackie, George B., Floshend, Gretna

KIRKCUDBRIGHT

1940 Barbour, Adam H., Auchengibbert, Crocketford, Dumfries (Kirkcudbright)
1939 Campbell, Alexander, Carsewilloch, Creetown
1939 Cruikshank, John, Castle Creavie, Castle-Douglas
1939 Gourlay, Robert Alan, Glaisters, Corsock, Castle-Douglas
1939 Sproat, William Thomas, Lennox Plunton, Kirkcudbright
1939 Steel, Mrs Annie D., Spittal, Creetown

WIGTOWN

1939 Ewing, Commander David Orr, R.N., of Dunskey, Portpatrick
1940 Gibson, William, Pinminnoch, Portpatrick
1939 Murray, Thomas Loch, Dunskey Estates Office, Portpatrick
1939 STUART, Lord David, Old Place of Mochrum, Port William

7.—INVERNESS DIVISION

CAITHNESS

1939 Campbell, James A., Quoynee, by Halkirk
1939 Macdonald, Alistair, Isauld Farm, Reay, Thurso
1939 Macpherson, R., Bardnaheigh, Shebster, Thurso
1939 Swanson, Sinclair, Banks Lodge, Watten

INVERNESS

1939 Mackenzie, John, 56-60 Eastgate, Inverness
1940 Mathers, Miss Ann S., N.D.D., 3 Union Street, Inverness
1939 Stewart William, Millowner, Culcabock, Inverness

MORAY

1940 M'Gregor, John, Cotts of Innes, Urquhart
1940 Watt, Alfred M., Mains of Sanquhar, Forres

ORKNEY

1940 Annal, John, Serrigair, South Ronaldshay, St Margaret's Hope, Orkney
1939 Taylor, Alexander, Banks, Burray

ROSS AND CROMARTY

1939 Mackenzie, A. R., Heathmount, Tain

SUTHERLAND

1939 HORNE, Sir Edgar, Lairg Lodge, Lairg

8.—BORDER DIVISION

BERWICK

1939 **M'Kerrow, Matthew**, Addinston, Lauder
1939 **Veitch, Archibald**, Leeside, Berwick-on-Tweed
1939 **Young, William Hall**, "Homebank," The Meadows, Berwick-on-Tweed

ROXBURGH

1939 **Douglas, Charles Allenby**, Gatehousecote, Hawick
1939 **Forbes, Colonel Alexander**, Surveyor for the County of Roxburgh, County Offices, Newtown St Boswells
1939 **Gray, Alexander**, Maxton East End Farm, Maxton, St Boswells
1939 **Hogg, Donald Ogilvie**, Kersmains, Roxburgh
1939 **Hutcheson, A. D.**, c/o John Swan & Sons, Ltd., Newtown St Boswells
1939 **Johnson, W. M.**, Rutherford House, Roxburgh
1939 **Roberton, R. K.**, Ladyrig, Kelso
1939 **Rogerson, George**, Roxburgh Mains, Roxburgh
1940 **Tinline, George**, Bellfield, Lilliesleaf, Melrose

SELKIRK

1939 **Clow, James L.**, Lindean Farm, Selkirk

ENGLAND AND WALES

1939 **Ackrill, A.** (Simmonds, Hunt & Montgomery, Ltd.), "Albion" Buildings, Boundary Street, Liverpool 5
1940 **Barnes, John**, Aikbank, Wigton, Cumberland
1939 **Bell, R. W.**, Solicitor, Longtown, Cumberland
1939 **Bolton, Richard** (Agricultural Food Products, Ltd.), 23 Upper Mall, London, W.6
1939 **Brennan, A. T.**, Trade Commissioner for the Government of the Union of South Africa, South Africa House, Trafalgar Square, London, W.C.2
1939 **Brown, David** (David Brown Tractors, Ltd.), Park Works, Huddersfield
1940 **Bryan, Kenneth M.**, c/o R. Silcock & Sons, Ltd., Stanley Hall, Edmund Street, Liverpool
1940 **Crosthwaite, W. E.**, Harrison's Lime Works, Penrith, Cumberland
1940 **Harrison, James**, Harrison's Lime Works, Penrith, Cumberland
1939 **Leaf, Stanley** (Olympia Oil & Cake Co., Ltd.), Unilever House, Blackfriars, London E C 4
1939 **Patrick, P. W.** (Firestone Tyre & Rubber Co., Ltd.), Great West Road, Brentford, Middlesex
1939 **Philp, Robert Charles Penny** (Tepalin, Ltd.), 9 Camomile Street, London, E.C.3
1940 **Post, A. P. van der**, Trade Commissioner for the Government of the Union of South Africa, South Africa House, Trafalgar Square, London, W.C.2
1940 **Valentine, James G.** (W. Dennis & Sons, Ltd.), Kirton, near Boston, Lincs.
1939 **Weightman, Wesley**, Old Burdon Dairy Farm, Seaton, New Seaham, Durham
1940 **Wilson, Captain R. G. M.**, Iceni Nurseries, Surfleet, Spalding, Lincs.

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